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Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 511.)

APHASIA IN RELATION TO ORGANIC DISEASES OF THE BRAIN—*Continued.*

GRAPHIC-MOTOR APHASIA. SUMMARY OF THE LEADING FEATURES OF THE DIFFERENT SIMPLE FORMS OF APHASIA. ADDITIONAL SIMPLE FORMS RECOGNISED BY LICHTHEIM AND WERNICKE. COMPOUND FORMS. METHOD OF CASE-TAKING.

GRAPHIC-MOTOR APHASIA.

THE graphic-motor centre D still remains to be considered. This centre is believed to be situated, as shown in the accompanying diagram (Fig. 13), at the posterior extremity of the second left frontal convolution, immediately in front of the motor centre for the hand, which extends at the same level across both the ascending frontal and ascending parietal convolutions.

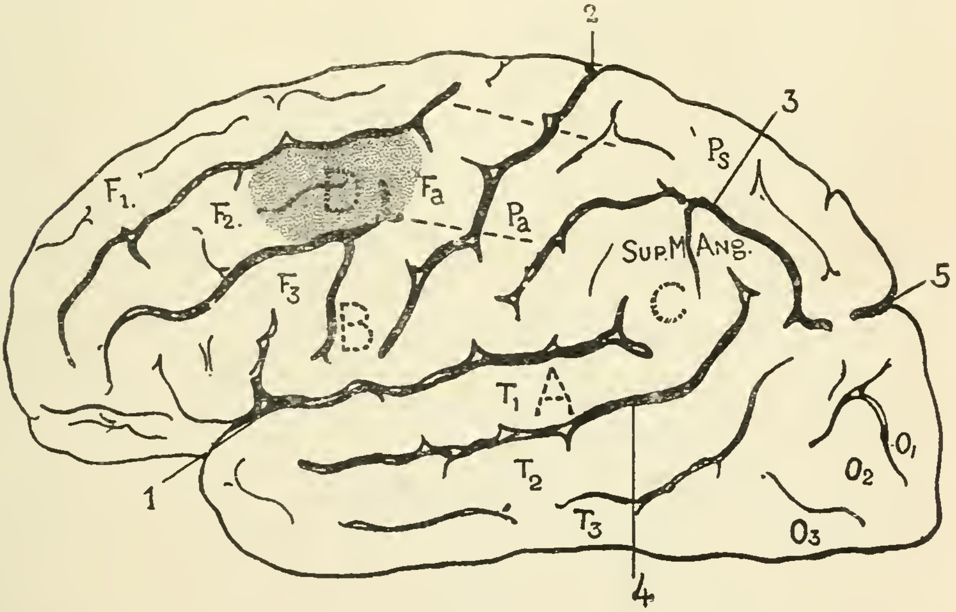

FIG. 13.

It is interesting to look back upon the gradual evolution of knowledge regarding the various form of aphasia, and to note the views that at different times have been held regarding the causation of agraphia. At first, the possibility of the existence of a special centre for the memories of the movements of writing seems scarcely to have been contemplated. The agraphia which was found to be so common an accompaniment of aphasia was supposed to be simply a necessary consequence of it. It was recognised as unreasonable to expect that words could be written, if, owing to amnesia verbalis, they could not even be remembered. We have already seen that opinion, in the present day, is coming round to this old view; which is now held to be a sufficient explanation of the agraphia in a great number of the cases presenting that symptom, though it is not supposed to be the proper explanation of it in all cases.

The next step in the evolution was the localization by Exner, in 1881,[1] of a special graphic-motor centre in the posterior extremity of the second frontal convolution, at D. It must be confessed that the facts adduced by Exner in favour of this localization are not very convincing; but nevertheless they afford a certain amount of evidence in favour of it. The localization proposed by Exner was accepted by various eminent writers on aphasia; and it thus came to be the fashion, for a time, to refer the symptom agraphia, in most cases, to destruction of this centre D. Lying, as it does, in juxtaposition with Broca's convolution, the centre D is, indeed, in a great number of cases of lesion of that convolution, found to be involved along with it.

But, within the last few years, much has been done to detract from the supposed importance of the centre D. In the first place, Wernicke directed attention to the fact that we can write not only with the right hand—with whose motor centre the centre D is in connexion,—but also with the left hand, with the elbow, with the right or left foot, and even with the teeth. It seemed to Wernicke that in the act of writing the *visual* images were the important ones; because, given a clear and distinct visual image of a word and its component letters, all that any movable part of the body to which a pencil can be attached requires to do, in order to produce the word in writing, is to make *a drawing* from that image. There can be no doubt that there is much truth in this doctrine. The fact that, as we have seen, the destruction of the visual centre C is destructive of the power of writing, is corroborative of it. But, though we grant the importance of the visual images at C in relation to writing, I do not think we should on that account imagine that the graphic-motor images at D are of no importance whatever. We should remember that the congenitally blind, who have no visual images at all, can yet be trained to write or print their names in ordinary characters.[1] Having no visual images, these congenitally blind persons must depend exclusively upon the psycho-motor memories of writing—the "kinæsthetic memories" of the act, as Bastian would term them. If, again, we compare, in our own persons, our facility in writing with the right hand with our awkwardness in writing with the left, we shall be able to realize how much more the right hand has learned to do than merely to *draw* the visual images revived within the centre C. When we write with the left hand or with the foot, we do, indeed, carefully and laboriously *draw* these visual images; but when we write with the right hand we utilize also the psycho-motor images that are probably stored at D. These are promptly revived by the visual images at C, and they are exteriorized or executed with the facility which comes of practice.

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[1] *Untersuchungen über die Localization der Functionen in der Grosshirnrinde des Menschen*, 1881, p. 57.

Nevertheless, it cannot be denied that the centre D has fallen, of late, from the position of high importance in relation to agraphia that it occupied in the opinion of writers on aphasia some years ago. The recent observations by Dejerine and Sérieux with regard to the centre C, and its relations to agraphia, have done much to diminish, in the current estimate, the importance of the centre D. Opinion, moreover, as we have seen, is coming round to recognise again the truth of the old view of Trousseau and others, that in a large number of cases of aphasia in which the patient cannot express himself in writing the agraphia is really due to the amnesia verbalis that attends upon aphasia, whether the lesion be at A or at B.

It would be interesting if we could have before us the record of a case in which a small and isolated lesion had destroyed the centre D, and it alone. A single case of this kind would show us definitely in what degree agraphia is produced by such a lesion; and it would show us, moreover, whether the agraphia thus caused is displayed only when the patient attempts to write with the right hand, or also when he attempts to write with the left. But, according to Dejerine,[2] no single case has yet been put upon record in which the lesion was thus strictly limited to the centre D. One case has indeed been put upon record, by Henschen of Upsala,[3] in which such a limited lesion had partly destroyed the centre D; but in that case there was also, in the same hemisphere, another limited lesion, which had destroyed, in like manner, the centre C. In all the other recorded cases in which autopsies have been made, it appears that the lesion destroying the centre D had also affected the centre B, or other neighbouring parts. We are left, therefore, to the doubtful evidence that has been furnished by cases in which there has been no autopsy. From such evidence, it is only permissible for us to guess that, when agraphia exists as an isolated symptom (without alexia or any trouble of spoken speech), the lesion may possibly be situated in the centre D. We shall be the more cautious, however, in coming to any definite conclusion, if we bear in mind what has been pointed out by Lichtheim,—that in motor or sensory aphasia with agraphia, when recovery takes place, the power of speaking is always restored before the power of writing; and that agraphia may thus, in such cases, linger as an isolated remnant of an aphasia due to lesion, not in D at all, but in A or B. Dejerine states that all the cases of apparently pure and uncomplicated agraphia that have hitherto been put on record appear to be really cases of this description. Let us take, for example, two of the best of them, which will be found detailed in a paper on this subject by Pitres;[1] the first being a case that occurred in the practice of Prof. Charcot, and the second a case that occurred in the writer's own practice.

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[1] This, by the kindness of W. H. Illingworth, the Head-Teacher, I have been enabled to verify by personal observation at the Edinburgh Blind Asylum.

[2] *Compt. Rend. de Soc. de Biologie*, 30th July 1891, p. 99.

[3] *Klin. und Anat. Beiträge zur Path. Gehirns, Erster Teil.* S. 173, Tafel xxxv.

CASE I. (Prof. Charcot.) A Russian officer, aged 52. In August 1882, the fingers of his right hand became suddenly enfeebled so that he could not hold a pen; but this paresis soon almost entirely disappeared, so that the patient could write again. He could speak Russian, French, and German. Six months after the occurrence of the paresis in the hand, when he was at an evening assembly, he found, to his great surprise, that when addressed in French or German he could not reply in either of these languages; though he understood perfectly what was said to him in them, and could still express himself in Russian with his ordinary facility. Little by little, he improved; regaining the power of speaking French, though that of speaking German still remained lost to him. When at this stage, he found, one day, on attempting to write a letter, that he could not write a single word; the loss of the power of writing being out of all proportion to the slight motor weakness which still lingered in the right hand. He then, on the 10th April 1883, consulted Prof. Charcot. The intelligence was found to be normal, and there was no word-blindness, the patient being able to read aloud French, German, or Russian. But he could not write in any one of these languages. When asked to write, "Je demeure Hotel de Bade," he could only write "Je dem." He could only write the name of Prof. Charcot in French and Russian, but not in German. It was found that there was still a little difficulty in the movements of the right hand, with slight cutaneous anæsthesia, and incomplete loss of the sense of position of the fingers.

Some days after the date of this examination, the patient died suddenly. There was no autopsy.

Although it is probable that, in this case, the centre D was affected, there was evidently serious disease in other parts of the brain, with some involvement of the centre A or B; and it is therefore probable that the agraphia was not due solely to disablement of the centre D. It is not stated how the patient could write with the left hand.

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[1] *Revue de Médicine*, 1884, p. 864.

Case II. (M. Pitres). The patient was seen two years after a cerebral seizure which had occurred in 1882, and had caused lasting paresis and rigidity of the right leg, slight paresis of the right arm and hand, and right homonymous hemianopsia. He was found to have agraphia when he attempted to express his thoughts in writing with the right hand, though with that hand he could copy letters and figures. He had already educated himself to write with the left hand, and with it could write very legibly. With the right hand, he could not write even numbers, except from copy. When asked to write the number 125 with the right hand, he had first to write it down with the left, and then copy it with the right. There was no word-blindness, and no trouble of spoken speech. This interesting case is very difficult of explanation. It is evidently not, any more than the last, an example of limited and isolated lesion in the centre D. The hemianopsia, indeed, suggests that there may also have been a lesion in the left occipital lobe.

Cases of isolated and limited lesion of the centre D, where the careful clinical records have been supplemented by accurate description of the pathological changes, have not yet been published. They are needed, before the exact importance of the centre D, in relation to the physiology and pathology of written speech, can be said to be fully ascertained.

Mirror Writing.

A point of interest in connexion with the writing of aphasic patients who are not the subjects of true agraphia, is that, in some few cases, when the patient attempts to write with the left hand he is apt to write from right to left, instead of from left to right. This is called *mirror writing.* A good many cases of it have been recorded; some of them being cases of patients with aphasia, and others being cases of patients suffering from diseases other than aphasia. Bernard,[1] for example (p. 237), records a very good case in which this mirror writing was well exhibited by a female patient suffering from locomotor ataxy, who wrote with her left hand because the attempt to write with the right always brought on violent pain in the right arm. This patient does not seem to have been fully aware of the peculiarity of her writing, being much surprised at receiving no replies to the letters she often sent to her friends. Of course such writing can with the aid of a mirror quite easily be read by any one.

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[1] *De l'Aphasie*, p. 237.

It seems to be almost natural for the left hand to write from right to left. Bernard (p. 235) says,—"Some have seen in mirror writing a pathological phenomenon, a new manifestation of aphasia; but this is an opinion which has not been accepted.

"In the Indo-Germanic race, the only race in which writing is centrifugal, mirror writing is the normal form of writing with the left hand."

Of course there must be something pathological in the patient's intelligence, if, when writing in mirror-fashion, he imagines that he is writing in the ordinary way.

BRIEF SUMMARY OF THE LEADING FEATURES OF THE VARIOUS ELEMENTARY FORMS OF APHASIA ALREADY CONSIDERED.

In now reviewing briefly the leading symptoms produced by destructive lesions in each of the speech-centres A, B, C, and D, it may be useful to keep in view the following diagram (Fig. 14). This is merely Fig. 9, with the addition of the circle M—which stands for the idea or meaning to be expressed or to be evoked—and the dotted lines connecting M with A and B, the centres of the primary couple, with which alone, in most persons, the ideas or meanings are in direct connexion.

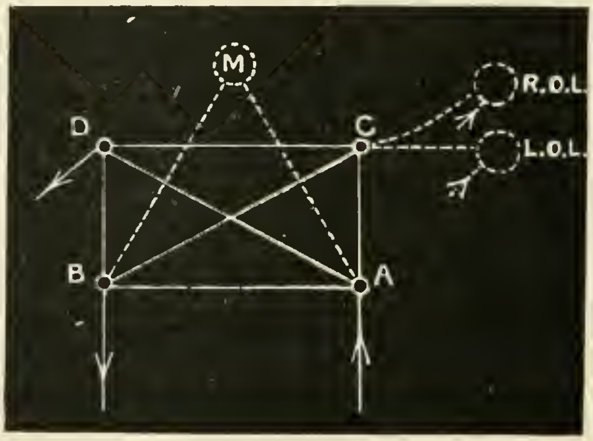

Fig. 14.

Let us begin with the two centres C and D, the centres for the visual and motor images of printed and written speech; and let us take first of all the centre D.

(1). *The Centre D, and Graphic-motor Aphasia.*—We have just seen how unsatisfactory is our knowledge of the exact relations of this centre to the production of writing. On the whole, however, it seems probable that a destructive lesion of D would render the patient agraphic, at least as to the right hand; but it is doubtful whether it would interfere at all with writing by means of the left hand. The left hand would probably still be able to *draw* the visual images of letters revived at C.

(2.) *The Centre C, and Visual Aphasia.*—(*a.*) We have seen that destruction of this centre is now proved to have the double effect of producing word-blindness (alexia) and agraphia. We also know that destruction of the grey matter of the centre does not produce hemianopsia, but that hemianopsia is produced if the lesion extend deeply enough into the subjacent white matter to cut across the Radiation of Gratiolet. (*b.*) We have seen that a lesion in the white matter of the occipital lobe that cuts off the visual word-centre C from impressions coming to it from the primary visual centres of the two occipital lobes renders the patient word-blind, but that such a lesion does not produce agraphia, because the centre C itself remains intact, and its images can still be revived from within, when the effort to write is made. In, apparently, all cases of this last kind, hemianopsia is associated with the word-blindness; because the lesion involves also the Radiation of Gratiolet.

(3.) *The Centre A, and Auditory Aphasia.*—Destruction of the auditory word-centre A causes, on the receptive side, word-deafness, and also marked interference with the power of interpreting visible speech, printed or written. On the productive side, it causes amnesia verbalis, with its companion symptoms, articulative amnesia and paraphasia. This form of aphasia is often rapidly recovered from; and, in the process of recovery, the word-deafness generally disappears before the amnesia verbalis and the paraphasia.

(4.) *The Centre B, and Motor Aphasia.*—Destructive lesion of this centre annihilates, or almost annihilates, the power of producing speech; owing partly to the asynergia (ataxia) verbalis which is its leading effect, and partly to the marked amnesia verbalis which it also produces. Though there is scarcely any interference with the reception and interpretation of audible speech, we have seen that there is some reason to think that there may be slight interference with the reception and interpretation of those words whose memories are the least deeply imprinted, viz., the names of concrete things. There is usually distinct interference with the reception and interpretation of visible speech, printed or written.

(5.) *The Conducting Fibres between A and B, and Conduction Aphasia.*—We have seen that a lesion which cuts across these fibres produces the form of aphasia known as Conduction Aphasia (Leitungsaphasie), whose characteristic symptom is the single one—paraphasia. In this variety of aphasia, there is neither, on the one hand, any word-deafness, nor, on the other hand, any defect of articulative power; because the centres A and B are themselves both intact.

It may be well to add here a few notes summarizing the causes which may produce Alexia and Agraphia.

Alexia.—(1.) When we remember that, as shown in Fig. 14, the meaning to be evoked by incoming words is in direct relationship only with the images of the primary couple A and B, it is not surprising to find that the destruction either of A or of B interferes more or less markedly with the interpretation of visible words, printed or written. It is generally admitted that there is such interference with the interpretation of visible speech when the centre A is destroyed; but a case has been cited which seems to show that there are exceptional cases in which, even in the absence of the centre A, the power of interpreting visible speech is retained, owing to the close relationship existing between the visual images of letters at C and the motor images at B, and the direct connexion of the latter with the equivalent ideas or meanings. (2.) Some suppose that when B is destroyed there is no interference whatever with the power of silent reading, as the visual images at C can still revive the auditory images at A, and thereby call up the meanings; but we have seen reason to believe that this is probably a mistake, since, in motor aphasia, alexia is almost always exhibited, in greater or less degree. (3.) Total alexia, true word-blindness, is exhibited, either when the centre C is itself destroyed, or when, itself remaining intact, it is, by lesion in the white matter of the occipital lobe, cut off from the impressions which normally act upon it from the primary visual centres of the two occipital lobes.

Agraphia.—If we try to summarize the causes which may produce agraphia, I think we may say,—(1), That it may be due to the amnesia verbalis which results from a lesion either in A or in B; (2), that it may be due to the amnesia literarum which results from a lesion in C; and (3), that a partial agraphia, displayed at least in the performance of the right hand, may, probably, be produced by a lesion at D.

BRIEF NOTE OF CERTAIN OTHER SIMPLE FORMS OF APHASIA THAT ARE RECOGNISED BY LICHTHEIM AND WERNICKE.

In the able paper from which I have already quoted (*Brain*, January 1885), Lichtheim, putting aside for the time the centres for written language, C and D, and looking exclusively to the centres of the primary couple A and B, recognises *seven* possible varieties of simple aphasia, due either to lesion in one or other of these two centres or to lesion in one or other of the conducting pathways that lead to and from them. I have already treated of three of these seven, viz., the aphasia resulting from lesion at A, that from lesion at B, and that from lesion in the conducting path between A and B. I now wish to consider very briefly the four additional varieties which are included in Lichtheim's classification. He gets these additional four by supposing the existence of lesion below and above each of the centres A and B, in the positions indicated in the diagram (Fig. 15), by the figures 4, 5, 6, and 7.

Wernicke, who has adopted this classification, proposes for these seven varieties the following names:—Nos. 1 and 2 he terms respectively Sensory Cortical and Motor Cortical Aphasia; No. 3 Conduction Aphasia (Leitungsaphasie); Nos. 4 and 5 respectively Subcortical and Transcortical Sensory Aphasia; Nos. 6 and 7 respectively Transcortical and Subcortical Motor Aphasia. But some of these proposed terms are unfortunately somewhat ambiguous in meaning. Perhaps there will be less ambiguity, if, for our present purpose, we substitute for "Cortical" the term "Pictorial" (to signify the relation of the lesion to the word-pictures or memories) and designate the varieties as follows:—1 and 2 as respectively Pictorial Auditory and Pictorial Motor Aphasia; 3 as Inter-pictorial Aphasia; 4 and 5 as Infra-pictorial and Supra-pictorial Auditory Aphasia; and 6 and 7 as Supra-pictorial and Infra-pictorial Motor Aphasia.

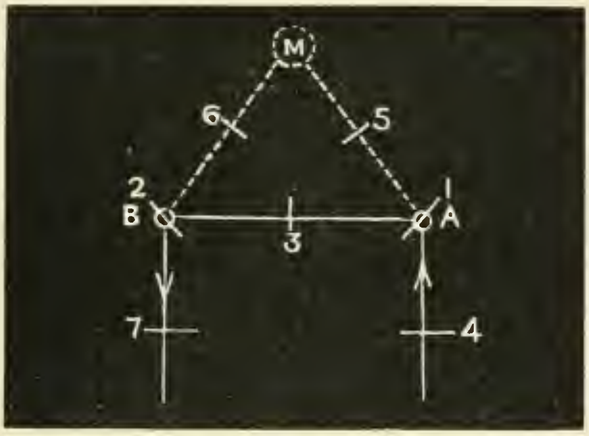

FIG. 15.—After Lichtheim; modified.

Passing over Nos. 1, 2, and 3, which have already been fully considered, let us look at the four others that are included in Lichtheim's classification.

No. 4. *Infra-pictorial Auditory Aphasia.*—The distinguishing feature of this variety is the existence of simple word-deafness, without Amnesia Verbalis or other associated symptoms of speech disturbance. Speaking, reading, and writing are intact; but, the auditory centre being, by a lesion in the afferent tract below it, cut off from incoming impressions, the patient is word-deaf, and therefore cannot understand what is said to him, though he hears the words as sounds. The educated centre A is simply cut off from the incoming words that normally reach it from both ears.

In illustration of this form, Lichtheim gives (p. 461) the case of a journalist, aged 55, who, in 1877, had an apoplectic attack, with complicated troubles of speech, including paraphasia. From these he partially recovered. Then, in 1882, he had a second attack, with aggravation of his speech troubles; but again recovered, so that eventually none of the symptoms remained, except a simple but total word-deafness. There was no difficulty in speaking, reading, or writing. He continued, indeed, to write articles for his journal, which were as good as those written before his illness. Though word-deaf, he was not deaf to other sounds. It was noteworthy, however, that he had lost his ear for music, so that he no longer recognised melodies. The case has already been referred to. It was this patient who sometimes asked his children to stop singing quartettes, as "they made too much noise." There had, of late years, been no improvement in the word-deafness.

Wernicke has recorded a case of the same kind (also already referred to), in which, in like manner, curious to say, there was also an affection of the musical faculty, the patient having lost the power of appreciating certain notes of high pitch. In this case, too, there was no progressive improvement; and Wernicke is inclined to think that this form of word-deafness may not be so curable as that produced by lesion at the centre A itself (pictorial auditory aphasia).

No. 5. *Supra-pictorial Auditory Aphasia.*—Here the path between A and M is cut across, so that auditory word-pictures revived in A fail to call up the ideas or meanings in M. Incoming audible speech, therefore, is not understood; nor, according to Lichtheim and Wernicke, is incoming visual speech—the patient having alexia as well as word-deafness. He can understand neither what he hears nor what he reads; and yet, the word-images in the centre A being intact, and capable of revival from without, he can repeat with ease, though without understanding it, whatever he hears said to him; and, in like manner, can read aloud with ease, though he does not understand what he reads. He can also easily write to dictation, and easily copy from print or from writing. A true Echolalia, with no understanding of what he is saying, is thus the most characteristic symptom. In his written speech, it has its equivalent in the power he retains of writing to dictation or of copying, without understanding the words written or copied. With regard to volitional speaking and writing, as the patient cannot, from M, call up the auditory images at A, which are so important for the guidance of the motor images at B, he exhibits amnesia of nouns, paraphasia, etc., and, in like manner, as a consequence of the paraphasia, he exhibits paragraphia. At page 454, Lichtheim records, in detail, a case which exactly corresponds with this picture.

No. 6. *Supra-pictorial Motor Aphasia.*—The path between M and B being cut across, it is impossible for the patient to express his thoughts in volitional speech. When he tries to speak volitionally, his attempts result in the same kind of failure as is exhibited in an ordinary case of pictorial motor aphasia, due to destruction of B. Nor, according to Lichtheim, can he express his thoughts any better in writing. Apart from volitional speaking and writing, everything is normal. The patient can understand both what is said to him and what he reads. He can also, with correct articulation, repeat words that are spoken to him (understanding them, in this variety); and can correctly and easily write to dictation and copy writing (understanding, in both cases, what he writes). At page 447, Lichtheim records a case entirely agreeing with this picture.

No. 7. *Infra-pictorial Motor Aphasia.*—To get the symptoms which characterize this variety, we must suppose the lesion to be so situated as to cut across only those fibres which connect the centre B with the lower centres, in the medulla, for the nerves of speech; and to leave intact all the connecting fibres between B and the other speech centres, as well as the fibres between M and B. Given such a lesion, the only disablement that would result from it would be disablement of spoken speech, both volitional and on attempted repetition of words heard. Otherwise everything would be normal: there would be no amnesia verbalis, no difficulty in volitional writing, writing to dictation, or copying, and no word-deafness. If, owing to accompanying paralysis, the patient could not write with the right hand, he would yet be able to do so with his left. Lichtheim, at page 449, refers to numerous cases already on record which present all the features of this type. The case of Patrick Keaney, which I have put on record in a former paper, might stand as a fairly good example of it.

Wernicke, who has adopted Lichtheim's classification, and who was, in fact, the originator of part of it, holds, with Lichtheim, that the simple forms of aphasia affecting spoken speech are seven in number. But he has pushed the classification still further. He applies it also to Written speech; and differentiates séven equivalent varieties of aphasic disturbance of written speech, which may exist when spoken speech is intact. His seven varieties are—(1.) Cortical Alexia; (2.) Cortical Agraphia; (3.) Conduction Agraphia; (4.) Subcortical Alexia; (5.) Transcortical Alexia; (6.) Transcortical Agraphia; and (7.) Subcortical Agraphia.[1] He illustrates these seven varieties by means of a diagram similar to Fig. 15, but differing from it in having the centres C and D substituted for A and B; and in having, instead of M, which stands, in Fig. 15, for the idea or meaning to be evoked or expressed, another letter, which stands for the word-percept (belonging to A and B) which has to be evoked by reading, or expressed by writing. If the reader desires to do so, he can reconstruct the diagram in this way, and work out these seven varieties of aphasic derangement of written speech for himself. Whilst quite prepared to grant that such speculations are often highly valuable as preparing the way for actual discoveries, I do not think that Nos. 3, 5, 6, and 7 of these aphasic disturbances of written speech are yet so well attested by actual cases as to make it necessary for me here to describe their symptoms. We have already considered Nos. 1, 2, and 4 (the cutting off of the centre C from incoming impressions), in detail. I leave the reader to study Wernicke's treatise[1] for himself; or to construct the diagram on the lines indicated, and imagine for himself the symptoms that would be exhibited in each of the four remaining varieties.

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[1] I have arranged both this list and the forgoing one in an order different from that in which they are given by Wernicke and Lichtheim.

Even as regards Lichtheim's seven varieties of aphasia in relation to spoken speech, it cannot be said that Nos. 4, 5, 6, and 7 have yet established for themselves so firm a position as Nos. 1, 2, and 3 are generally allowed to hold. It has not yet been shown where exactly in the brain the lesion capable of producing each of them must be situated. There is, in fact, an anatomical difficulty in conceiving where a lesion could be situated that would cut across the afferent fibres and leave the efferent intact, or *vice versâ;* because the afferent and efferent fibres belonging to A and to B are joined to the grey matter of these centres on only one and the same side of the cortex, so that a subcortical lesion, unless situated at some distance from the centre, must almost necessarily cut across, not only the efferent or only the afferent fibres, but both together. Cases, however, are now being recorded which lend support to the classification;[2] and Lichtheim's own cases are strongly corroborative of it. As evidence, the latter are defective only in one respect, viz., that none of them include records of pathological changes. Whether or not Nos. 4, 5, 6, and 7 will yet establish for themselves as firm a position as that of Nos. 1, 2, and 3, we cannot at present say; but it is nevertheless certain that the study of this classification affords valuable lessons in the analysis of the symptoms of aphasia, and helps to explain combinations of symptoms that, without this classification, would be inexplicable.

The last of Lichtheim's varieties, No. 7, presents, as we have seen, an apparently possible form of *subcortical* motor aphasia, whose characteristics are due to the circumstance that only one set of the fibres in connexion with the motor centre has been cut across, viz., the set whose function is to convey the commands of the motor speech-centre in Broca's convolution—that is, of the centre B—down towards the organs of articulation and phonation. All the other sets of connecting fibres are, in this form, preserved intact. But it should be understood that this is not the only possible form of subcortical motor aphasia. On the contrary, it is quite possible for a lesion in the white matter beneath Broca's convolution to cut across all the various sets of connecting fibres that are related to it. In such a case, the grey matter of Broca's convolution would be cut off from its connexions with all the other speech centres, and also from its connexions with the higher centres for thought. Its disablement, therefore, would be complete, and the resulting

[1] *Fortsch. der Med.*, ii. 1886, p. 463.

[2] See, for example, A. Pick, *Ein fall transcorticaler Sensorischer Aphasie, Neurol. Centrabl.*, Leipzig, 1890, ix. S. 646; and G. Brock, *Ueber einen fall von transcorticaler Motorischer Aphasie* (Graduation Thesis), 1892.

symptoms would, in every way, be the same as those that are produced by a lesion destroying the grey matter of the centre B itself. Thus cut off from all its connexions, and rendered functionally inert, the grey matter of the centre B would inevitably undergo atrophy. I shall return to the subject of subcortical aphasia, when, in a future paper, I take up the consideration of the effects produced by disease in the various parts of the motor speech tract.

I must now ask the reader to make note of the point at which we have arrived. We have considered the varieties of simple aphasia that can be produced by the destruction of a single speech centre, or by the cutting across of connecting fibres passing to or from each of them; and now we are come to the beginning of the efferent motor tract which leads downwards from Broca's convolution to the organs of articulation and phonation. At this point I leave the speech tract for the present, to return to it afterwards.

In the meantime, I wish (1) to say a few words about the Compound Varieties of Aphasia; (2) to treat of the best method of case-taking; and (3) to take up, in the next paper, the consideration of the relations of aphasia and other speech-derangements to Functional Disorders of the cerebral cortex. When I have finished this consideration, I shall return to the motor speech tract; and my final task will be to note the various diseases that may cut that tract across, or may more or less interfere with its conducting power, at various levels in its course.

Compound Varieties of Aphasia in connexion with Organic Disease of the Brain.

For the analytical study of aphasia, no cases are so valuable as simple cases of isolated lesion in a single centre or conducting tract, such as we have hitherto been considering. But it should be remembered that such simple cases, representing one or another of the pure types, are comparatively rare. Much more commonly, the lesion is not thus confined to a single centre or tract, but several centres and tracts are involved at the same time. On the one hand, the disease may be so extensive as to destroy several of the centres; and, on the other, even when only one centre is destroyed, the other centres may be functionally disturbed or disabled, owing either to the proximity of the lesion, and the diffusion of irritation from it, or to the pressure which certain lesions, such as apoplexy or tumour, may exercise upon them from a distance. Thus, mixed or compound cases of aphasia are more common than simple or pure ones.

It would, no doubt, be comparatively easy to describe a considerable variety of these complex combinations, by merely adding the symptoms of one pure type to those of another. But the reader can make these combinations for himself. It will be sufficient for me here to note, in the briefest manner, three of the most common of the compound varieties of aphasia.

(1.) There is the type of Compound Sensory Aphasia, in which both sensory centres—viz., the auditory speech-centre A and the visual C—are involved together. That these two speech-centres should be so often involved together becomes easily intelligible, when we remember that they lie in juxtaposition, and that they are supplied by neighbouring branches of the Sylvian Artery.

(2.) The Compound Motor type, which results from the involvement in the same lesion of the centres B and D,—the motor centres for speaking and writing. There is no doubt that these two parts of the brain are very often involved together. Juxtaposition and vascular supply, as in the former case, explain the association. But the reader will remember that the agraphia which so often attends upon motor aphasia is not always due to involvement of the centre D, being often really due to the amnesia verbalis that attends upon lesion at B.

(3.) The type of Total Aphasia. This type is presented when a lesion of the left hemisphere is so extensive as to destroy or disable all four centres, A, B, C, and D. And, indeed, it may be said to be presented whenever the centres A and B are both destroyed, though C and D escape; because without the primary couple A and B, the centres C and D are, in almost all persons, if not quite in all, incapable either of conveying a message to, or of transmitting one from, the mind.

Occlusion of the Sylvian Artery near its origin may have the effect of disabling all four centres. And, again, an apoplexy in the substance of the hemisphere may for a time disable all four centres by compression. It will be readily understood that the intellect, in all such cases of total aphasia, is very seriously impaired.

In connexion with these various types of aphasia, a fact first noted by Lichtheim has already been alluded to. It is that, in the process of recovery from total aphasia, due to lesion at A and B, the faculty of articulate speech is recovered first. Not till long afterwards are the powers of reading and writing restored; and, indeed, these powers may never be completely restored, even though the restoration of articulate speech has long been perfect or almost so. This seems to be a fact, though the explanation of it is not yet very apparent.

METHOD OF CASE-TAKING.

When we are taking notes of a case of aphasia, it is well that we should have in our minds some definite plan that may help us to record the symptoms in a connected and intelligible manner, and prevent us from omitting any points of real importance. I do not think it a good plan to take each of the centres separately, and inquire how the functions of each are affected. The functions of the various centres overlap each other too much for this. It is far better, I think, in the first instance, to get all the facts of the case without reference to the centres, and only then to consider what evidence they afford as to the functional condition of each of the centres. To get at the facts of the case, the easiest method is, I think, to take each of the two forms of speech, the spoken and the written, separately; and with regard to them, to inquire (1) how the patient receives and interprets; (2) how he produces volitionally; (3) in the case of spoken speech, how he repeats or echoes; and, in the case of written speech, how he writes to dictation, and writes from copy.

Full information upon these points will cover nearly the whole ground of the symptomatology of aphasia. Let us try to make a more detailed note about how such information is to be brought out, when we are examining a case after this method.

SPOKEN SPEECH—(1.) *How is it received and interpreted?* Is the hearing good? The hearing being good, is there any difficulty in interpreting the meaning of words heard (word-deafness)? The patient's replies to questions, even if these replies are made only by gesture, will show whether or not he understands what is said. Ask him to put out his tongue, to shut his eyes, to give his hand, etc. He should also be tested specially as to his power of interpreting nouns and verbs. Ask him to touch, one by one, as the parts are named, his nose, ear, eye, chin, etc. Ask him to try to whistle, to shut his eyes, to smile, etc. If the examiner carefully refrains from giving the patient hints, by gesture or expression of countenance, of what is wanted, the recorded answers to such questions will indicate whether word-deafness is present, and in what degree.

(2.) *How is it produced?* When there is pronounced motor aphasia, and speech is reduced to a recurring utterance, one or two familiar words, and, upon occasion, an emotional or conventional expression, the whole vocabulary of the patient should be carefully noted down. When, in either motor or auditory aphasia, there is a considerable vocabulary, we should—

(*a.*) Record words or phrases of the patient showing evidence of defective power of articulation. As to his utterance, for example, we should note any specimens of lalling, stammering, syllable-stumbling, or slurring.

(*b.*) Look for evidences of amnesia verbalis, and its companion symptoms, articulative amnesia and paraphasic. In doing so, we should show the patient common objects and ask him to name them; and, in recording his answers, we should make note of difficulties in remembering nouns, etc., as well as of mistakes in the use of them. When the patient is practically dumb, we should test him for amnesia verbalis by asking him to write answers to questions; or, if he cannot write, by asking him, after Lichtheim's method, to indicate with his fingers the number of syllables in the names of common objects shown to him. If there is paraphasia, we should note whether the patient is immediately conscious of the errors he makes in the use of nouns, etc., or, on the other hand, is quite unconscious of them.

(3.) *How is it repeated or echoed?* The patient should be got to attempt the repetition or echoing of words spoken to him. If he is word-deaf, and cannot understand a mere verbal request to attempt this, the examiner must try to get him to understand what is wanted by putting the request in the language of gesture and repeating the word or phrase over and over again. If the patient is able to echo words or phrases, the attempt should be made to ascertain whether, in doing so, he understands what he is saying.

WRITTEN SPEECH.—(1.) *How is it received and interpreted?* Is the sight good? Is hemianopsia present? Is the patient able to understand questions put before him in writing or in print. If he is speechless, and cannot by *speech* indicate how much he understands, show him in writing or in print such requests as, "Put out your tongue," "Give me your left hand," etc.; and note how he complies with them. If there is some power of interpreting written or printed words, try to ascertain how much there is by asking the patient to read silently a sentence in a book or newspaper and then questioning him about it; framing the questions, if the patient is speechless, in such a manner that he will be able to answer them by gesture or pantomime.

(2.) *How is it produced?* Ask the patient to write his name. If he succeeds, put simple questions to him, and ask him to answer them in writing. If he writes with comparative ease, ask him to write, at his leisure, the history of his illness. Note in his performance evidence of—(1) paragraphia (which is usually only the written translation of paraphasia); (2) intoxication of the mind with a letter or word; and (3) faults of spelling or syntax. If the right hand is paralysed, let the patient try to write with the left. If the right hand is not paralysed but is agraphic, let him furnish examples of the performance in writing of both the right hand and the left.

(3.) *How does the patient write to dictation and from copy?* Try him in both ways; and if he is able to do either or both, try to ascertain if he understands the meaning of what he writes.

ASSOCIATED PHENOMENA.—(1.) *Gesture language* (*Pantomime*). Does the patient understand the gesture language of the examiner, and does he himself employ gesture language intelligently? Or, on the other hand, are there evidences of amimia or of paramimia?

(2.) *Extra Graphic Symbols.* How does he understand and employ such graphic symbols as numbers, algebraic signs (if previously known to him), musical notation (if he was previously a musician), etc.

(3.) *Is there any evidence of Mind-blindness* (*Psychical Blindness*), as shown by inability to recognise common objects shown to him, and to indicate their uses; or by inability to recognise intimate friends at sight?

(4.) *The Emotional and Intellectual Faculties.* Are the emotions lively and their expression vivid, or are they dull? Is self-control well maintained, or does the patient frequently exhibit emotional disturbance?

What is the condition of the Intelligence as exhibited in expressive actions, and in capability of engaging in games of skill, of conducting business affairs, etc.

(5.) *The Motor and Sensory Functions.* Alls ymptoms of motor or sensory paralysis should, of course, be carefully described.

These, I think, are the points we should bear in mind when we are making notes of a case of aphasia. The greatest care must, of course, be taken, not to overtask the damaged brain of the patient. If there is risk of doing so, the work should be done gradually,—little by little.

Note on Terminology.

I never use the term "Mind-Blindness" without feeling it to be a very poor term for the symptom it is meant to designate. The term, as already explained, is meant to designate a patient's loss of the power of recognising at sight objects formerly familiar to him; this loss being due to the fact that the old visual images or memories of the objects, imprinted on the brain by efforts of the attention, are now no longer revived by the sight of the objects when they are looked at. That the images are not revived is either because the centre containing them has been destroyed or because it is now cut off from its normal connexions with the primary visual centres in the occipital lobes. I have, in the text, suggested the term Object-Blindness, as a substitute for Mind-Blindness: but it cannot be said that even that term is altogether appropriate; because the objects are still seen, though they are no longer recognised—the patient having the feeling that he is seeing them for the first time. In this respect, however, the term Object-Blindness would be no worse than are, for allied conditions, the current terms Word-Blindness and Word-Deafness, which are open to precisely the same kind of objection. I remember, some years ago, when I was taking notes of a case of word-blindness in the Infirmary, one of my surgical colleagues, who happened to enter the ward, asked me what was the case I was working at. I told him it was a case of word-blindness. "Can the patient not see the words?" he asked. "She can see them," I said, "but cannot recognise them." "Then why do you call her Word-Blind?" said he. As everyone beginning the study of Aphasia has this difficulty in comprehending the terms Mind-Blindness, Word-Blindness, and Word-Deafness, would not it be well to find improved substitutes for them, and discard them altogether?

The Greek word ἀγνωσία means want of recognition (α privative and γνῶσις recognition). We might therefore use the word Logagnosia (λόγος, a word, and ἀγνωσία) as a general term for loss of the power of recognising words, audible or visible. For its particular varieties, we might use the term Visual Logagnosia, as a substitute for Word-Blindness; Auditory Logagnosia, as a substitute for Word-Deafness; and Motor Logagnosia, as a term for that interference with the reception and interpretation of written or printed speech, and even, to a slight extent, of audible speech, that is caused by the destruction of the motor word-images at B,—a symptom for which we have hitherto had no term of any kind.

The term Agnosia, thus used in the sense of loss of the power of *recognising*, would stand in distinct contrast to the term Amnesia, already in use as the term for loss of the power of *recollecting;* and would designate a failure on the side of reception and interpretation, just as Amnesia designates a failure on the side of production.

In the text, I have used the term Amnesia Verbalis to designate the failure to call up in the memory the images of words when they are needed for purposes of vocal expression or of silent thought ; and in like manner I have used the term Amnesia Literarum for the failure to call up the visual images of letters and words when they are needed for purposes of writing. But, for the sake of uniformity, it might be well to give up using these terms, and to represent the two varieties of amnesia verbalis by the terms Auditory and Motor Logamnesia, and amnesia literarum by Visual Logamnesia.

If this terminology were adopted, then,—(1) in connexion with the Visual word-centre C, we should have for use the term Visual Logagnosia, instead of Word-Blindness, to designate failure on the side of reception and interpretation, and the term Visual Logamnesia, instead of Amnesia Literarum, to designate failure on the side of production ; (2) in connexion with the Auditory word-centre A, we should have the term Auditory Logagnosia, instead of Word-Deafness, and the term Auditory Logamnesia, instead of "Amnesia Verbalis due to disablement of the auditory images" ; (3) and in connexion with the Motor word-centre B, we should have the terms Motor Logagnosia and Motor Logamnesia.

In Word-Blindness pure and simple, the patient fails to recognise only one particular set of objects, viz., words printed or written. In general Object-Blindness (Mind-Blindness), on the other hand, the patient fails to recognise other objects besides words. As explained in the text, the delicate and intricate images of words are imprinted efficiently in the higher visual centre of only one hemisphere, whereas the simpler images of common objects are imprinted efficiently in both hemispheres. When the visual word-images are destroyed, then, almost always, while one of the two sets of common-object images is destroyed along with them, the other set, in the opposite hemisphere, remains ; so that the patient does not become the subject of general object-blindness. He becomes so, in any marked degree, only when the higher visual centre in both hemispheres is destroyed.

If Visual Logagnosia is to be accepted as the term for Word-Blindness, what term will be suitable for general Object-Blindness ? I would suggest the term Visual Pragmatagnosia (πρᾶγμα, an object, and ἀγνωσία). This term implies loss of the power of recognising a common object at sight. When this power is lost, there is commonly lost along with it also the power of recollecting the appearance of the object, that is to say, the power of calling up its visual image from within, when the attempt is made to revive the idea of it in the mind. For this loss, I would suggest the term Visual Pragmatamnesia.

Word-Deafness probably bears to Mind-Deafness the same relation as Word-Blindness bears to Mind-Blindness. In pure word-deafness, it is only words that cannot be recognised ; in general mind-deafness (a condition to which, as yet, but little attention has been directed), common sounds also fail to be recognised. For general Mind-Deafness, what term would be suitable ? I would suggest the term Acousmatagnosia (ἄκουσμα, a sound, and ἀγνωσία). And so, again, for failure to call up in the memory the image of a common sound, such as the clang of a bell, when one wishes to think of the sound, I would suggest the term Acousmatamnesia.

Thus, in connexion with the obliteration of old Visual images of Objects in general, we should have the two terms Visual Pragmatagnosia and Visual Pragmatamnesia ; and in connexion with the obliteration of old images of common Sounds, we should have the terms Acousmatagnosia and Acousmatamnesia.

I beg to submit this terminology for consideration. That reform in the terminology of Aphasia is needed, I have long felt; and I hope that the above terms may be found to be sufficiently clear and precise.

I may add that the selection of the above terms has been kindly supervised by a distinguished Greek scholar of Edinburgh.

(*To be continued.*)

II.—CHOLERA PRECAUTIONS IN SCOTLAND.

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(*Read at Ayr Congress of Sanitary Association of Scotland, 7th September* 1893.)

THE United Kingdom stands in a unique position as regards the methods on which it relies for preventing invasion by Cholera. Elsewhere throughout Europe dependence is largely placed on quarantine,—on the compulsory detention, outside of a country, of persons or ships coming from places where the disease is known to exist. Quarantine, as its name implies, originally extended to forty days, but with increasing knowledge of the incubation period of cholera, the quarantine period has been correspondingly shortened. In this country, however, we have practically no quarantine unless where the disease is known to have attacked a ship on its voyage. Indeed, on a vessel being ascertained by the officer of Customs to have come from an infected port, it cannot be compulsorily detained for so short a time as to allow of sending for the Medical Officer of Health, unless the disease have declared itself on board in a manner so obvious as to have drawn to it the attention of the captain or officer in charge. It is generally recognised, however, that liberty of entry to our harbours has here been carried to an unjustifiable extreme, and that during the prevalence of cholera all vessels from infected ports should be detained to allow of medical examination. But even if this restriction were imposed, the broad distinction between quarantine and no quarantine would remain as characterising foreign and home preventive procedure.

It is obvious that where a country is entirely surrounded by the ocean, and has an efficient Customs service, special facilities exist for carrying out this method of prophylaxis. Similarly it is obvious that a country with a foreign trade so enormous as that of Britain is particularly liable to receive infection through some of its numerous ports, though it is most fortunately placed as regards overland transmission. What, then, is the justification,—if, indeed, there be any,—of the national neglect of such protection as quarantine is capable of affording? The answer is twofold. On the one hand, the disturbance of commerce, and the financial loss which would accrue to this nation of shopkeepers, would be enormous, and should be avoided if any other means exist for preventing the disease. On the other hand, the Government of the country does believe that other means do exist, and that they consist, first, in the general health administration and condition of the country as a check on the spread of the infection if it should obtain access; and, second, on the organised vigilance of the sanitary authorities in charge of the coasts and great rivers, as a means of preventing the disease finding a footing on our shores. I have little doubt that all in this room are of opinion that the position taken up by Government is the right one,—that the way to keep out cholera is not by artificial barriers, which, after all, are apt to break down when most required, but by taking care that the particular conditions under which alone cholera can flourish, shall be, so far as possible, non-existent in this country. In some sciences we are far behind continental countries, but in the specially utilitarian science of sanitation we are, as becomes a nation of shopkeepers, far in advance. Sanitation means pounds, shillings, and pence on both sides of the national ledger. It means an expenditure considerable, no doubt, in itself, but it means also a saving which is far greater than the expenditure,—a saving which, in regard to cholera, is represented by a foreign commerce free and undisturbed, while that of other nations is hampered and hindered; and which, in regard to disease in general, and to infectious disease in particular, is represented by a lower death-rate, by a lower sick-rate, by a longer and a healthier, and therefore more economically profitable life; and so also by an increased revenue from income tax, and by an expenditure less than would otherwise prevail, for the maintenance of paupers and criminals. That is a large claim for sanitation, but it is borne out by facts, and perhaps no better concrete example of these facts could be found than is furnished by the almost defiant attitude which we are enabled to assume towards cholera, as compared with the well-founded consternation which it creates whenever it threatens continental countries. With us, cholera epidemics have come in the years 1832, 1849, 1854, and 1866. These successive outbreaks have shown a successively lessening mortality, and since 1866, though there have been repeated threatenings, there has been no actual prevalence of the disease. The reasons are not far to seek. For many years it has been well recognised, at least by the profession in this country, that an uncontaminated water supply is at the very foundation of cholera precautions. It seems only under rare conditions of foulness of atmosphere, and of abundance of cholera poison, that the infection can take the air; oftener it can be received along with solid food; and most frequently it can be imbibed in liquids which have become infected by discharges from the alimentary canal of persons suffering from the disease. Indeed, it belongs to the very alphabet of cholera that infection comes, not from the breath, but from the contents of the stomach and bowels, and similarly that it is conveyed, not by the atmosphere, but by contamination of solid and especially of liquid food. And thus it comes that throughout the sixty years that have elapsed since cholera first invaded this country, all the numberless improvements in water supply that have taken place in all parts of the country, and especially in populous places, have *pro tanto* diminished the field in which the disease can find its victims. The great majority of such improvements have consisted in the substitution for supplies from local sources, liable to local contamination, of water brought from a distance, from lake or moorland in unpeopled districts, where no cholera-infected excrement is at all likely to find its way. Probably some of you have read two most interesting articles which have lately appeared in the *Scotsman*, by no less an authority than Professor Koch, and have there noted how, in regard to Hamburg and Altona, he discusses the importance of proper filtration of drinking water. Both towns receive their supply from the polluted waters of the Elbe, and Altona takes it in at a point not far below where the whole sewage of Hamburg is discharged into the stream. One thing that strikes me in reading Koch's most valuable papers, is the matter-of-fact way in which he discusses the pros and cons of a protection which, at the best, most of us in this country would look on as exceedingly precarious,—a protection which depends on the removal, by means of a thin and easily broken layer of mud formed on the surface of sand filters, of the solid and liquid filth which has just previously been discharged from one of the largest cities of the German Empire. So long, however, as Londoners drink water filtered from the Thames and the Lea, we islanders must not crow too much over our continental neighbours. What impresses itself on one in considering the conditions which prevail in such places, is the enormous advantage of having a water supply derived either from deep underground sources, as Koch suggests, or from upland surface or highland loch, where contamination from human sources is at a minimum to begin with, and is subject to a maximum amount of subsequent dilution. But even here we must recollect that, at least as to enteric fever, the very great dilution in the Caterham outbreak, and in the still existing epidemic at Worthing, has been found insufficient to prevent infection from the use of the contaminated water. The results of modern experience, therefore, are to this effect, that prophylaxis, *re* water supply, consists both in safety of source and in thoroughness of filtration. In this country we are inclined to rely more on the former than on the latter, while in Germany, so far as I can judge, more weight seems to attach to filtration.

While, as I have indicated, the proportion of the population of this country now provided with a fairly safe water supply is much greater than in 1866, and very much greater than in 1832, and is every year growing still greater, yet there are in many rural districts, and even in some towns, water supplies which are only too liable to be contaminated by any infection capable of conveyance by drinking water. In Scotland, under the Local Government Act, very much has already been done, and much is in progress, to remedy deficiencies. It is impossible to read the annual reports of the various counties without being struck by the number of new water supplies that are being introduced, in substitution for the old shallow wells that have so long prevailed. But I fancy there are few county medical officers who could not, within their own domain, point to villages or hamlets where enteric fever easily finds a footing, and where cholera would be, for similar reasons, a most dangerous visitant. Indeed, there is one district under my own charge in which, if cholera broke out, I believe the only satisfactory means would consist in the carting of drinking water for many miles along steep roads, to supply many thousands of people. The expenditure here would be enormous, but in an indirect way the expenditure in the same district is already enormous. Often, when in the district, I have been struck by the number of vans with ærated waters doing business in the villages. Meeting with one or two of these at a colliery row a few weeks ago, I asked a housewife who was making a purchase, how many bottles were usually consumed by her household? She replied, about thirty per week. At 1s. per dozen this comes to 2s. 6d. a week, and perhaps for the same house the weekly rent would not exceed half a crown. This, therefore, would make a tax of 20s. per £ per annum for a most imperfect and incomplete supply, and yet we find continually that tenants grumble if they are rated at more than a few pence per £ for a thoroughly satisfactory provision of one of the essentials for sustaining life.

And now I come to the main purpose of my addressing you today. It is to call attention to a most serious defect which exists in our first line of defence against cholera in Scotland. Seeing that we have deliberately thrown aside the protection of quarantine, and that in the country as a whole there are many spots in which cholera, when once introduced, would have a fair chance of thriving, it is most important that our protection against its entrance by infected ships should be as thoroughly organized, and as perfect in its details as experience can suggest. In regard to one essential precaution I regret to say that this is not the case. I shall best explain my meaning by referring to a concrete case.

The river Forth forms by far the most important access to Scotland for vessels coming from the continent of Europe, from which cholera in this country is most likely to be conveyed. Bordering on the Firth of Forth there are half a dozen separate counties. These counties contain, among them, a great many harbours, most of which are within the areas of burghs, while some are under the jurisdiction of the district committees of County Councils. Among the burghs are Anstruther Easter, Burntisland, Dysart, Inverkeithing, Kinghorn, Kirkcaldy, Buckhaven (including Methil), Alloa, Grangemouth, Bo'ness, Queensferry, Leith, Cockenzie, Dunbar. Under the district committee are places like Granton and South Alloa. With few exceptions, each of these places has its own local authority, and its own staff of officials, and in Scotland the duty is laid on each such local authority separately, of taking care that cholera shall not enter the country through the harbour over which it has sanitary charge. The Board of Supervision calls on each authority to fix on for a mooring-place for infected vessels, to provide hospital accommodation for cholera, to arrange for medical examination of infected or suspected vessels, to take elaborate precautions against the possible importation of infected rags, to see to the pumping out of suspected water or sand ballast, the inspection of filthy aliens, the notification to local authorities interested of the names and addresses of persons leaving vessels which have come from infected ports, and the hundred and one other and useful precautions against the possible importation and spread of the dreaded disease.

Now, it is to be observed that in all the places which I have mentioned, port sanitation is only a part, and in many cases a very small part, of the public health functions of the local authorities involved. Take, for example, the case of a large county district with a large agricultural and mining and manufacturing population, and with, in some particular corner, a small harbour to which a few vessels come from abroad. Obviously it is altogether outside the ordinary work of the local authority here to interest itself in such questions as I have briefly mentioned. And even in the case of the largest individual port on the Forth—that of Leith—the local authority has charge of the sanitation of the town in addition to that of the port. But whether the port be one to which the arrival of vessels from the continent is a daily and hourly occurrence, or whether it be an insignificant harbour with hardly any foreign trade, the duty of cholera prevention is as imperative in the one case as the other. From this system grave evils result. There is an enormous and almost intolerable squandering of time and energy by committees and officials. All along the estuary, each local authority, be its district ever so small or almost entirely inland, has to receive and consider the numerous circulars and instructions from the Board of Supervision, and to arrange and elaborate its precautions as carefully as the largest port, and sometimes with all the more difficulty on account of the very smallness of its individual requirements. Take the question of hospital accommodation. I know one local authority which for the past year and a half has been vainly striving to obtain a piece of ground near its solitary harbour, or to rent or purchase a properly situated house, or to arrange with a neighbouring corporation for the privilege of entry to its almost empty hospital. For there is nothing so alarming—so unreasonably alarming—to the public, whether landlords or tenants, as the mere suggestion that a cholera hospital should be erected anywhere in their neighbourhood. Indeed, it seems impossible to get people to appreciate the fact that cholera is practically non-infectious through the atmosphere, and that pollution of food and water by cholera excreta is less likely to occur under hospital management than under any other system of treating the disease. All this trouble, moreover, has been taken by the local authority under the oppressive knowledge that the chances are ten thousand to one that the hospital will never be required, and that in its erection not only would the money of the ratepayers be wasted, but that afterwards the hospital standing empty, and either going gradually to decay or being kept in order at the public cost, would provide matter for an object lesson for every parochial politician desirous to dilate on the follies of sanitary faddism and the extravagance of County Councils. And yet the local authority knows that the one chance in ten thousand might occur, that cholera might be introduced to the country through its door, and that then it would be held responsible for a most serious failure in its duty to the country as a whole. Such is the predicament in which many riparian authorities in Scotland have been placed during the last eighteen months.

We come now to the question of the remedy. Fortunately it is not far to seek, and can already be seen in operation. The English Health Act (clauses 287 to 292) provides for the formation by the Local Government Board of Port Sanitary Authorities, having a special constitution and special duties and powers. The grand principle underlying the system of port sanitary authorities is the combination, for all objects of port sanitation, of all the authorities on any firth or river, which have any port, however small, within their district. The authority may consist of a board of representatives of all the districts interested, in proportion to their importance. Optionally, the Local Government Board may hand over the entire duties of port sanitary supervision to the largest and most important of the local authorities concerned in the combination.

As an example of the working of this system, I take the case of the River Tyne Port Sanitary Authority. It consists of representatives from eleven riparian districts. The medical officer for the city of Newcastle acts also as medical officer of health for the whole port. There is, in addition, an assistant medical officer of health, an inspector of nuisances, and other officials. From the last annual report of the medical officer I find that during 1892 about 1500 vessels were boarded on the Tyne as coming from infected ports; about 13,000 visits were paid by the inspector; 1000 nuisance notices were served; 150 structural defects in vessels were remedied; of crews, passengers, and emigrants, over 140,000 came under inspection; about 750 cargoes of rags, fish, fruit, wheat, etc., were examined; in over 500 cases the water supply of vessels was overhauled and the tanks cleansed; in 27 cases the food supply to crews was examined; 9 cases of overcrowding, and 14 smoke nuisances were dealt with. The great bulk of this was done independently of any question of cholera, and as part of the routine work of the authority. In regard to cholera, special inspection was kept up in September and November, when the disease was most to be feared, and extra assistants, medical and lay, were employed. About 500 ships, containing 8500 of crew and passengers, from cholera-infected ports, were inspected; about 70 cargoes of fruit were examined; 70 water tanks were disinfected; about 130 vessels had their fresh water ballast pumped out; other vessels had sand ballast dealt with; 50 cases of diarrhœa were inquired into; and 3000 names and addresses of persons travelling by steamers from infected ports were transmitted to the local authorities to whose districts the persons were going. The port sanitary authority owns a floating hospital, in which infected cases are isolated, and a steam launch for the use of the officials. It will be observed from some of the details I have given that the authority looks on ships as dwelling-houses, and attends to their ordinary sanitation, ventilation, cleanliness, water supply, etc., just as if they were situated on land.

I do not for a moment suggest that much or all of this work is not done already in Scotland, in the larger ports. But it is obvious that it cannot so effectually or so economically be carried out in very small ports, especially where port work forms only a small fraction of the sanitary duties of the local authorities.

In Scotland we have no combined authorities, and the Board of Supervision has no such power as that of the Local Government Board of England to create combinations. Some eight years ago, the present Secretary to the Scottish Board suggested to one of the principal authorities on the river Clyde that a voluntary combination of the various districts interested might be attempted, but nothing came of the matter at the time. Quite recently, however, on the Clyde, the Corporation of Greenock has obtained a special Act which, *inter alia*, deals with one phase of this question. Up till now it had been the duty of the Greenock Sanitary Authority to deal with all infectious cases discovered in connexion with the boarding of vessels by the Customs Authorities at the Tail of the Bank. Very many of the vessels were not, of course, bound for Greenock, but for Glasgow and other ports on the river, and the Greenock Authorities felt that an undue burden was placed on them in treating the infected sick belonging to ships which were only passing the Tail of the Bank on their way up the Clyde. The new Act provides that in future a payment shall be made for each case treated by the local authority of the port to which the vessel is going. This is the first step in Scotland towards dealing with any aspect of the question, and it is useful as a recognition on the part of Parliament that some alteration is required. But it would have been much better if, instead of legislating by private Bill to remedy a particular grievance, the whole question could have been broadly dealt with in an Act of general application.

I have little doubt that every sanitary official who has had anything at all to do with ports cannot but be of opinion that on this point Scotland, as a whole, stands very badly in need of additional legislation on the lines of the English Act. Of course, in this paper I disclaim all suggestion of originality. I am merely giving expression to the general opinion of all who have official experience in the matter. My reason for bringing the subject before you to-day is that the Sanitary Association of Scotland has the advantage of being composed not merely of officials, but of including chairmen of local authorities and others of wide influence in public health affairs throughout the country, and I am anxious to enlist their assistance in this question. It is to be hoped that when legislation does come, it will take the form not of a partial but of a complete scheme of sanitary law. There are several other questions in Scotland equally urgent with that of port sanitation, but perhaps during the past year or two there is none which has pressed itself more on the attention of those concerned. For some time sanitary officials have been doing their best to influence the Government and Parliament to introduce a new Public Health Act, and I do believe that appreciable progress has been made. But in addition to official representations, it is essential that local authorities themselves should take active steps in the matter. Some of them have already done so, and the purpose of my paper is to give one illustration of the need for legislation, and to urge that the local authorities represented at this Congress will do their best to assist in obtaining it, not merely regarding port sanitary authorities, but regarding the whole scope of sanitation in Scotland.

III.—A FATAL CASE OF LITHOTRITY: DEATH FROM RUPTURE OF THE BLADDER.

By Surgeon-Lieutenant H. G. MELVILLE, I.M.S., Rajanpur, Punjab.

THE following fatal case of rupture of the bladder during the operation of lithotrity occurred under my charge at Rajanpur Civil Dispensary in June last. The fact that this termination to the operation is a rare one, and that the case presents some features of interest, must be my apology for recording it.

Jamal, a Balooch, aged 50, was examined on the 21st June, and the presence of a vesical calculus diagnosed. The history I obtained was that nearly five months previously he had been in the hospital, and on February 10th lateral lithotomy was performed, and a stone removed. The hospital assistant had not been present at the operation or afterwards, and could not supply any particulars. The symptoms of stone had reappeared some weeks after the operation, and had continued up to the time of admission. He had also, it appeared, suffered from cystitis.

It was decided to perform lithotrity, and the patient returned on the 26th June from his village, where he had gone to make arrangements for his stay in hospital. The urine on examination was alkaline, but did not appear to be septic.

The operation took place on the morning of June 28th. All the usual precautions were taken, and the stone was crushed without difficulty. A No. 16 silver catheter was passed, and the aspirating apparatus attached. On the suction being first employed, a large quantity of the particles of the crushed stone passed over and fell into the receiver. The india-rubber bulb was passed a second time, but on relaxing it the bladder wall was felt immediately to impinge upon the catheter. More of the boric lotion was accordingly added gently to the apparatus. This was stopped, however, when it was noticed that the addition of nearly three-quarters of a pint failed to fill the apparatus, and also that there was an absence of the usual regurgitation of the fluid with respiratory movement. At the same time, the patient began to show some signs of collapse, and attempted to vomit. On endeavouring to evacuate the bladder with the aspirating apparatus no fluid was withdrawn, and the exhauster was accordingly removed. Only a few drops of fluid came by the catheter. The operation was at once suspended.

On making further inquiry into the patient's history it was elicited from the compounder, who had been present at the operation of lithotomy, that on that occasion the sound had slipped and the rectum had been wounded by the knife. A recto-vesical fistula had existed for some time, and I was then informed that nearly up to the time of operation the patient had been passing urine occasionally by the rectum, and some fæcal matter per urethram.

Treatment.—The patient was at once given morphia, $\frac{1}{2}$ gr. hypodermically, and hot opium fomentations applied to his abdomen. Later, opium, 1 gr. thrice daily, was administered, and a gum-elastic catheter left in the bladder to drain off any urine collecting there. In the evening a small quantity of urine escaped in this way.

The patient had a good deal of abdominal pain, and could not retain even a tablespoonful of milk or any brandy. On giving a small quantity of cocaine hydrochlorate solution (equal to $\frac{1}{4}$ gr.) a few minutes previously, some milk and white of egg was retained. His collapse and weakness were considerable, and about 4 P.M. he developed all the symptoms of acute general peritonitis, and died at 6 P.M. on the 29th June.

No post-mortem examination was permitted, so that it could not be ascertained where the rupture had taken place. At no time was the mucous membrane of the bladder grasped between the blades of the lithotrite, and no force was employed during the entire course of the operation.

I am inclined to think that the filling up of the bladder under the pressure of the evacuating apparatus had torn away some adhesions of the bladder to the rectum, and that the weakened and diseased organ was ruptured posteriorly from the site of the former fistula up into the peritoneal area.

IV.—PATHOLOGY AND THE SCIENTIFIC MIND: Part of an Introductory Lecture delivered at the Medical College for Women, Chambers Street, Edinburgh, 11th October 1893.

By William Russell, M.D., F.R.C.P.E., Lecturer on Pathology in the School of Medicine, and Assistant Physician to the Royal Infirmary, Edinburgh.

Within the past week or two my thoughts have turned from time to time towards the development of our knowledge of pathology. This and other things have led me to think of the evolution of the scientific mind, not only to its present level, but to its present ideal. Some gleanings from these thoughts may be somewhat appropriate at the beginning of another session, for the questions have a practical and important bearing upon you, who are preparing and fitting yourselves for the study of living pathology. It is always well to know how knowledge has been acquired; and to us in medicine it has special lessons, as indicating the habit of mind which is to be cultivated, and the attitude to be assumed towards the present-day questions in our own profession.

If you go far enough down you find the primitive idea of disease simple enough, and, if you like, spiritual enough; for among primitive folk there is no agnosticism or scepticism as to the existence of spirits, or even of two classes of them. Disease and sickness were the work of evil spirits which by the initiated could be exorcised by charms and varied rites and ceremonies. Prevention and exemption from disease might be sought for in a devil-worship in which the friendly attitude of the disease-producer was sought and his continuous favour desired. I need only remind you of Africa and of the knowledge we have of the peoples and tribes of that vast continent, to recall to you examples of this most primitive idea of pathology.

Belonging to the same order of idea is the attributing of disease to a spirit, not normally mischievous and evil-doing, but beneficent. Then disease becomes a manifestation of his displeasure, and to appease his anger and regain his friendliness you have the human sacrifice as amongst the Druids; or if you go to the East you will find a pathetic story in Rudyard Kipling entitled "The Sacrifice of Er-Heb," in which an Eastern princess offers herself as a sacrifice to a neglected god to stop the plague in her village.

A step further on you find the Hebrewistic idea. There, you have the Monotheistic belief as a special revelation, as it always was, and yet to the Hebrew of old, disease was the hand of the Almighty, the act of an offended God, and a punishment for sin either national or individual. Doubtless we can put our modern knowledge into the language of the Hebrew, but his conceptions of the offended God and the punishment for sin are not ours; and the repentance and sacrifice required from us for the removal of the plague is a very unromantic scavenging and purifying process. There you had, as the outcome of a conception of Deity resting upon ignorance of things pathological, a social tyranny and individual wrong. Imagine, if you can, what it would be at present if disease were regarded by the public in this old light, and if its victims regarded themselves as socially ostracised. Could any conception be more harsh, or the actions based upon it more unsympathetic and repellant? and yet it was the outcome of a deeply religious sentiment and a religious belief; immature and wrong, of course, and even cruel in its effects, as religious sentiments and beliefs can be even to this day.

If we look at a speculative people like the Greeks, there is an entirely different order of things. They speculated on life, its nature and its origin, and on the after-life. Disease necessarily attracted their attention; they saw the individual exposed to violent disturbances, decay, and death; the community the victim of a mysterious power leading to a widespread and terrifying mortality; and it became the province of philosophy to explain these. There were cold, hot, and moisture hypotheses,—doctrines of one cause. From this speculative chaos light arose when Hippocrates, the Father of Medicine, separated medicine from philosophy, and began crudely and falteringly to make medicine a science of observation instead of speculation. This has given to him the fathership of modern medicine, for to us medicine is the observation of disease, the action based upon and following upon our observations, not belonging, except in a subsidiary position, to the study of pathology, the science of disease.

There are still, even in Scotland, interesting and curious survivals of old popular beliefs regarding pathological processes. There are localities where the belief in the evil-eye and in witches still lingers. Not long ago I was assured by a friend who was intimately acquainted with a district which need not be named, that the local witch in female form was still recognised and feared, for she was faithfully believed to have the power of inducing miscarriages in cattle; while the evil-eye of some female neighbour was equally honoured as capable of drying up the milk supply.

Passing, however, from these attractive aspects of our subject, we have next to note the line along which the true science of disease advanced. No material advance was possible until the structure of the body was followed and its various functions more or less defined. As knowledge of these was being acquired, as new facts were discovered, and new light was thrown upon the working of the complex animal organism, their bearing upon diseased processes led necessarily to controversies and contentions, and there were solidistic and humoral schools of pathology, there were beliefs in spontaneous generation, there were essays by eminent physicians on the influence of the sun and moon, and on epidemic constitutions, and so on, all of them indicating and proof of the uncertainty of knowledge and its incompleteness. However, the bounds of reliable knowledge and of absolute fact gradually extended in spite of a continuous frontier warfare. Following upon assured knowledge of normal structure came the recognition of abnormal structure in the various parts and organs of the body. This at first, and to a comparatively recent date, was exceedingly crude, and confined to the grosser changes and appearances. In going over part of the Pathological Museum of the Royal College of Surgeons of Edinburgh, catalogue in hand, I was constantly impressed with this. You will find there, for instance, jar upon jar occupied with hearts showing the lymph of pericarditis, and so described that the impression is left upon the mind that what we regard as unimportant modifications in external appearance were not so regarded by our near predecessors, and therefore that their knowledge and appreciation of this local lesion was crude and indefinite; and so it also was in many other conditions.

The microscope in due time revealed, step by step, the details of normal structure, and following on that, the stages of morbid structure and of pathological processes, until now you can determine by the naked eye alone, and with almost unerring certainty, the minute changes in any given piece of lung, heart, liver, or kidney. Such is the state of our certain knowledge of visible processes, that in the great preponderance of instances there is no room for differences of opinion amongst experts. Cases, however, remain in which from incomplete knowledge there is still room for differences of view as to the interpretation of appearances; as to appearances themselves there is practically none. But even here it is necessary for the truly scientific mind to candidly and frankly dissociate appearances and their interpretation. Interpretation is sometimes a matter of provisional judgment or opinion, and often must and ought to remain so until knowledge is so complete that doubt can no longer exist. And it is this candid open-mindedness which is, I take it, the ideal scientific spirit towards which we have all to work. Opinions and decisions ought often to be consciously provisional; we ought never to absolutely mortgage our future position when knowledge is necessarily incomplete and experience immature. We must ever keep a mind ready and willing to receive and consider new facts and to modify our opinions and actions accordingly. The one-sided mind, the one-idea person, has no place in scientific medicine; the lop-sided in medicine is pathological; the fanatic is a monstrosity. The aim of medical training is the development of the well-balanced judicial mind on the top of assured knowledge and carefully developed and accurate observation. The unimpassioned search for truth is the highest conception. Let the search be earnest; but prejudiced and preconceived it ought never to be. The acquisition of knowledge and the perception of truth ought to be our daily aim.

In the time hereafter it may devolve upon some of you to show that the extending of the frontier of scientific truth is as possible to you as it has proved to be to the generations of medical students of the other sex who have preceded you. Whether your future work will lie at home, in trying to so commend your services to your own sex that you will be the pioneers in a social revolution as regards things medical; or occupying posts in the mission field of much less resistance than the home ones; or fitting yourselves for the higher scientific walks as future teachers in your own colleges, let me impress upon those of you who are swayed by strong religious sentiment, that all honest and good work is God's work; that the advancement of scientific truth is part of the great plan given us to work out; that all work can be consecrated; and that God's work is confined to no one sphere of activity. As students of medical science you must have wide views of truth: no one-sided and therefore pathological overgrowth is permissible in you. The attainment of this scientific mind and spirit will doubtless materially influence and modify your relations to many ethical and moral questions, but that is only part of the richer life, in the courtyard of which you, as students of medical science, already stand, and which you must not hesitate to enter into and possess.

V.—BLOOD PRESSURE IN RELATION TO CARDIAC AND RENAL DROPSIES.

By JAMES T. R. DAVISON, M.D., formerly Resident Physician to the Edinburgh Royal Infirmary.

A WIDE divergence of opinion exists with regard to the mode of production of cardiac and renal dropsies. Believing this to be due to a confused notion of what blood pressure really is, and to a misconception of the conditions under which it is exercised in the circulation, I beg leave to lay before the profession certain views with respect to the manner in which some of the factors of the circulation operate,—views which, though contrary to those generally taught on the subject, appear nevertheless to explain satisfactorily the *modus operandi* of both cardiac as well as renal dropsies.

The heart has hitherto been considered as the all-powerful propelling factor of the circulation, and the arterioles as a system of tubes whose normal function has been to create a peripheral resistance to the arterial circulation, enabling this thereby to accumulate a certain amount of blood pressure, necessary for the onward movement of the blood from the arteries into the veins.

I will endeavour to demonstrate that this theory of the circulation is erroneous, that the work done by the heart has been greatly exaggerated, and that the arterioleolar system, far from creating a peripheral resistance to the arterial flow, is a powerful, independent, and active propelling factor of the circulation.

That the aorta and other arteries are normally under a state of high tension is a fact of every-day demonstration; but that this tension is the result of cardiac propulsion *plus* peripheral resistance is merely an assumption which has received no proof.

And, firstly, it may be asked, What object would peripheral resistance serve in the circulatory economy? The great end of the circulatory apparatus is the nutrition of the tissues. In order that this nutrition be duly effected it is necessary that the blood flow slowly and continuously through the capillaries. It is a well-known law that the capacity of a channel determines the velocity of the fluid which flows through it. Foster[1] states: "The velocity of the flow is in inverse proportion to the width of the bed, to the united sectional areas of the vessel. . . . And, indeed, it is this width of the bed, and this alone, which determines the *general* velocity of the flow at various parts of the system." The collective capacity of the circulatory tube at the level of the capillaries being so very much greater than what it is at the level of the aorta, the slowness of the circulation through the capillaries is perfectly explained, without having recourse to any peripheral resistance produced by the arterioles.

In considering the continuousness of the capillary flow great care must be taken to distinguish propelling from distending blood pressure. When water flows evenly along the bed of a river, its pressure is almost altogether propelling fluid pressure,—the liquid moves along in an onward direction, with no inclination to bulge outwards. But if from any cause water comes down the river in a torrent,—in other words, if the same quantity of water which before passed in a certain time now passes in a much shorter period,—then the propelling fluid pressure becomes in great part distending, and while the rapidity of the flow is increased, the river at the same time overflows its banks.

Let us consider for a moment the circulatory apparatus to consist of a heart and a single tube of uniform calibre throughout. So long as the ventricular contraction took place slowly the blood pressure would be of a propelling kind, and the blood would move onwards without any tendency to distend the tube. But the moment that the ventricular contraction was effected in the rapid and forcible manner in which it is brought about in Nature, then the same condition would obtain as in the case of the river overflowing its banks after a torrent,—the propelling would in great measure be transformed into distending blood pressure, and the tube next to the heart would distend,—in other words, irrespective of peripheral resistance, blood pressure would be increased for the moment in that part of the tube next to the heart. Were these forcible and rapid contractions to succeed each other quickly, then, owing to the closure of the semilunar valves and the elastic properties of the tube, the series of distentions produced in the first instance at the proximal end of the tube would be imparted in a wave-like manner along its whole length. As each of the waves represent distending pressure with a tendency to transform itself into propelling pressure, and as this transformation would in part be effected as the wave travelled from the proximal towards the distal end of the tube, it follows that each wave on reaching this distal end would have lost part of its rapidity.

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[1] *Text-Book of Physiology*, Foster, p. 223.

Let us now suppose that the circulatory tube, instead of being single and of uniform calibre throughout, at a certain distance from its commencement divides into two branches, having a collective calibre greater than that of the original tube. Inasmuch as each wave represents a certain amount of distention produced by a certain amount of fluid, it follows that if the collective calibre of the tube be increased, while the same quantity of fluid will continue to produce the same amount of distention, the form of this distention will be altered, for it will have gained in circumference, but it will have lost in depth,—in other words, the distention will be shallower. If the subdivision of the tube were to proceed in such a manner that the collective calibre of the divisions was in each case greater than that of the divided branch, a point would be reached where the depth of the distention would disappear altogether, and the wave would cease to exist. Now this is exactly what takes place in the actual circulation. The quantity of blood expelled by the rapid and forcible contraction of the ventricle is unable to propel onwards all at once the aortic column. Its pressure becomes therefore in part distending, and as a result the aorta is distended in its capacity. The aortic wave thus produced travels along the course of the artery, but as this divides and subdivides continually, enlarging each time its collective calibre, and as at the same time the distending is being gradually converted into propelling pressure, a point is reached at the level of the arterioles where the wave is completely lost and the circulation becomes continuous. It is thus seen that the continuousness of the capillary circulation, so necessary for purposes of nutrition, is brought about by the consecutive enlargement of the collective calibre of the subdivided arteries, aided by the elasticity of the arterial wall, and is completely independent of any peripheral resistance due to the arterioles.

But it has also been argued that peripheral resistance is necessary for the activity of the venous circulation by accumulating tension in the arteries, and thus by differences of pressure favouring the movement of the blood from the arteries into the veins. This theory is contradicted by facts. The doctrine held in the present day may be stated in the words of Professor Foster:[1]—"At each point along the system nearer the left ventricle, and therefore further from the left auricle, the pressure is greater than at a point further from the right ventricle, and so nearer the right auricle; it is this difference of pressure which is the real cause of the flow from one point to the other." Were this doctrine true, there should be a correspondence between differences of pressure and velocity, which absolutely does not exist, as shown by facts adduced by Foster himself.

According to Foster,[2] the blood pressure in the carotid of a rabbit is 70 mm. Hg., while that in the jugular vein is only 3 or 4. We should therefore expect to find a very marked difference in the velocities of the carotid and jugular vein, which we do not, for while the velocity[3] in the carotid of a dog or horse is 300 or 500 mm. per second, that in the jugular vein of the dog[4] reaches 200 mm. per second, a difference which could never be explained on the theory that differences of pressure determine the flow of the circulation.

But, further, it is an ascertained fact that while the blood pressure in the aorta is very high, that in the vena cava is extremely low. We should, again, expect to find a very marked difference in the velocity of the circulation at these two ends. Now, according to Foster,[5] the total systole of the ventricle occupies probably more than ·3 of a second, while the total diastole of the ventricle occupies probably less than ·5 of a second. Inasmuch, therefore, as the same quantity of blood that enters the aorta from the heart is the same that enters the heart from the venæ cavæ in each cardiac cycle, it follows that the velocity of the blood in the vena cava is three-fifths of what it is in the aorta. It is thus demonstrated that differences of blood pressure along the course of the circulatory tube are not the cause of the onward movement of the blood. We thus see that peripheral resistance of the arterioles is not a factor of the circulation; and when we remember that arterioles are composed chiefly of muscular tissue, that this muscular tissue is in a constant state of semi-contraction, that the aggregate quantity of this tissue cannot fall much below, if it does not equal or excel, that of the left ventricle, it would certainly have appeared strange that, in the economy of the circulatory apparatus, in order to facilitate the action of a powerful muscle another equally powerful one should have been placed to counterbalance it,—and this is nothing more nor less than what the doctrine of peripheral resistance amounts to.

What, then, is the function of the arterioles? The arterioles are composed chiefly of muscular tissue in constant activity. We have seen that as the blood reaches the level of the arterioles it is practically pulseless—that is, its pressure is almost altogether propelling blood pressure, a force acting in the direction of the axis of the vessels. The constant semi-contraction of the arterioles implies force acting almost at right angles to the axis of the vessels. As the blood is not contained in a closed inelastic space, this force will be transformed into motion, and motion in the direction of least resistance. The very fact of the blood moving towards the capillaries shows that it is in that direction where lies least resistance. Therefore the action of the arterioles is to move the blood towards the capillaries. It is thus shown that the collective arterioleolar muscle is an independent propelling factor of the circulation, aiding, not counteracting, the action of the left ventricle, the blood being propelled onwards by the combined action of both.

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[1] *Text-book of Physiology*, Foster, p. 225.
[2] *Ibid.*, p. 203.
[3] *Ibid.*, p. 220.
[4] *Ibid.*, p. 223.
[5] *Ibid.*, p. 251.

Having once established that the constant semi-contraction of the arterioles is a propelling factor of the circulation, co-operating with the heart in driving the blood forwards, it necessarily follows that a less than normal semi-contraction of the arterioles must retard, and a more than normal contraction must accelerate, the flow of blood towards the capillaries and veins. A less than normal semi-contraction means dilatation of the arterioles, while a more than normal semi-contraction implies contraction of the same. We have always been taught to associate dilatation of the arterioles with increased activity of the circulation, and contraction of them with retardation of the flow of blood. This teaching has been based, firstly, on the false doctrine of peripheral resistance; and, secondly, on imperfect data derived from microscopical evidence. It is true that, on examining the web of a frog, dilatation of the arterioles is seen to be followed, at least for a time, by increased rapidity of flow. But a local manifestation of the circulation cannot be made to exemplify the general condition of the same. If in a small area of the body dilatation of the arterioles gives rise to increased flow of blood, it does not necessarily follow that were the dilatation to be general the increased activity would also be general. In the case of the localized area the increased activity of the dilated arterioles is brought about by the reflection of the general blood pressure upon canals that have been widened; but were this widening to be general over the body, there would be no general blood pressure to be reflected anywhere, and the increased activity of the circulation would fail to appear. If the spinal cord[1] be divided between the roots of the fifth and sixth dorsal nerves, where the splanchnic fibres of the cord to the abdomen and lower limbs would be cut, the bloodvessels of the abdomen and the cutaneous ones of the lower limbs dilate; at the same time the blood pressure is reduced to a very few millimetres of mercury. On the doctrine of peripheral resistance, this great lowering of the general blood pressure would be explained by the removal of that resistance in so great an area of the body. But the true explanation is otherwise. When the splanchnic fibres supplied to the abdomen and lower limbs are divided, the arterioles in these two regions dilate,—that is, they relax their force, and by this relaxation withdraw themselves as a propelling factor of the circulation; the heart has now to propel the blood onwards by itself, but whereas before its propelling force *plus* that of the arterioles could drive the blood through the capillaries and veins, now, unaided, it is unable to accomplish the work, and as a result the blood stagnates in the capillaries and veins; the overfilling of the capillaries and veins brings, as a necessary consequence, the underfilling of the arterial system, which, again, in its turn brings about a lowering of the arterial blood pressure. It is thus seen that general dilatation of the arterioles, far from increasing the activity of the circulation, favours its stagnation in the capillaries and veins. And thus we come to see that the action of the heart as the great propelling factor of the circulation has been greatly exaggerated, as has also the propelling power of the great collective arterioleolar muscle been equally ignored.

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[1] *Text-book of Physiology*, Foster, p. 322.

Conversely, general contraction of the arterioles increases arterial pressure, not because peripheral resistance is augmented, but because the collective arterioleolar muscle acts more powerfully, and thus its increased propelling force, combined with that of the heart, serves to accelerate the flow of blood through the capillaries and veins, this acceleration filling the heart at a greater speed than normal, and thereby stimulating its contractile power to a greater degree, which in its turn increases arterial tension. Naturally, were the contraction of the arterioles to be carried to an extreme degree, the channels of these vessels would be occluded, and the circulation would come to a standstill; but we are here only speaking of what practically occurs in Nature, and we repeat once more, that if the arterioleolar muscle implies propelling power (and this cannot be denied), then general dilatation of arterioles, which means lessening of this propelling power, must retard the circulation, while general contraction of them, which means increase of propelling power, must increase the activity of the same.

We will not now pause to discuss the important bearing which this view of the action of the arterioles has upon therapeutics, but will proceed at once to examine in its light the mode of production of cardiac and renal dropsies.

We have seen that the normal activity of the capillary circulation is the result of the combined action of the ventricular and arterioleolar forces. If either of these forces be debilitated from any cause, and the other remains as before, the consequence must be the diminution in the activity of that circulation. A diminution in the activity of the capillary circulation implies a tendency to stagnation of its blood, and this tendency implies, again, a diminution of propelling, with a corresponding increase of distending blood pressure. Increase of distending blood pressure in the capillary circulation favours filtration outwards of its contents. It is thus seen that impairment of either the ventricular or arterioleolar force will favour the presence of œdema.

If the ventricular force were the one at fault, where should we expect to find the œdema first? Naturally in those parts furthest removed from the heart, for the further the part is removed from the heart the less will its action be felt. As a matter of fact, in cardiac lesions with want of compensation the œdema begins first in the foot. (It is true that in some cases the œdema begins in the liver; but here the conditions are very different from those found in the rest of the body, for the circulation has to pass through a double set of capillaries. Were it true that the liver swells first because it is the organ nearest to the obstruction of the venous flow into the heart, then, for the same reason, the thigh should swell before the foot, which it does not. It is also true that œdema of the lungs may be a first symptom, but that, again, has reference to the pulmonic circulation, and not to the systemic, which is the one in which my argument is placed for the present.)

If we could imagine a disease in which one of the first symptoms was dilatation of the arterioles, we should, for the same reason mentioned above, expect to find increased distending capillary blood pressure and consequent transudation, but in this case we should not look first for the transudation in these points farthest from the heart, since here the cardiac action was not at fault. We should look first for the transudation in those parts of the body where the capillaries had least resisting tissue around them. In acute Bright's disease puffiness of the eyelids is one of the earliest symptoms, and we know that it is in this situation where the capillaries have least resisting tissue around them.

Have we any grounds for believing that dilatation of the arterioles is one of the first symptoms of acute Bright's disease? In the first place, it is evident, from the reasonings which we have sustained above, that increased cardiac action can never produce increase of capillary *distending* pressure, therefore the increased action of the heart seen in acute Bright's disease cannot be the cause of the œdema. Nor can the œdema be due to toxines retained in the blood and acting on the capillary walls themselves, for the simple reason that puffiness of the eyelids may appear before the suppression of urine. The œdema not being due to the heart, nor to toxines acting on the capillaries, it can, then, only be due to dilatation of the arterioles, which means impairment of arterioleolar force, which again implies increase of distending capillary blood pressure and consequent transudation. The earliness of the œdema points to reflex action.

The human economy is not devoid of examples where dangers to the organism are averted by means of reflex action. The stomach is endowed with a reflex apparatus by means of which it is enabled to eject noxious substances which might have been introduced into its interior. What more natural, then, than that the kidneys should be similarly endowed, and be enabled in a given moment to lay open the valves of the circulation—the capillaries of transudation—so as to prevent the possible accumulation of toxines in the blood, such as might occur in acute inflammation of the kidneys; and this opening of the valves could reflexly only be done by acting on parts that possess reflex nerves,—it could only be effected by impairing the action of the arterioles, and thus increasing the distending pressure of the capillaries, which would be followed by immediate transudation.

And the sequence of the disease is in accordance with this theory of renal dropsy. The heart begins to hypertrophy, and with it the œdema disappears. Now, a heart never hypertrophies unless there be a cause for its hypertrophy. The heart maintains the circulation with the aid of the arterioles, and if these fail in their part of the work owing to their dilatation, why, then, a call is made on the heart to do extra work, and hence it hypertrophies. But once it has hypertrophied the excess of the ventricular action counterbalances the deficiency of the arterioleolar contraction, and hence the column of blood as it enters the capillaries carries with it sufficient propelling pressure to enable it to pass rapidly through them without producing their distention. Hence the reason why in acute Bright's disease the œdema disappears with the advance of cardiac hypertrophy.

Cardiac and renal dropsies are thus seen to be the result of simple capillary transudation, brought about by stagnation of the blood in the capillaries, this stagnation being the result of impairment of the propelling forces of the circulation of the heart in one case, of the arterioles in the other.

It will be evident that in cardiac as well as renal lesions these two factors may be both impaired in their power, and corresponding symptoms must arise.

To avoid confusion, I have not in the course of this paper mentioned the muscular tissue found in the large, middle-sized, and small arteries. This muscle must likewise have an independent, and not a simple, elastic reflected action; it must contribute independent energy to the work of the circulation, else it would not be muscular tissue; but its action is quite secondary, forming, as it does, part of vessels which have an essentially elastic and reflected function.

VI.—THE RELATION OF INFLUENZA TO GYNECOLOGICAL, OBSTETRICAL, AND PEDIATRIC CASES.

By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E.

(*Read before the Obstetrical Society of Edinburgh*, 13*th Dec.* 1893.)

This is now the fifth successive winter in which influenza has come as a most unwelcome visitor to our shores; and although it would seem to have attacked the male sex with greater virulence and with more frequently fatal effect than the female, it has by no means spared the latter. To the Fellows of this Society the effect of influenza upon menstruation, pregnancy, labour, and the puerperium cannot fail to be of interest; and many of us must also have had occasion to note its occurrence in infants and children, and its influence as a complication of some gynecological affections. It is not with the intention of adding much to what is already known upon this subject, or of giving the results of the observation of an unusually large number of cases, that I have brought forward this communication; it is rather with the view of starting a discussion upon this most interesting topic, and of eliciting from the Fellows details of their experience and practice.

During the last three years there have been several noteworthy contributions to our knowledge regarding influenza in its relation to midwifery and diseases of women. Gottschalk (*Centr. f. Gyn.*, xiv. p. 41, 1890; and xvi. p. 49, 1892), Rudolph Müller (*Centr. f. Gyn.*, xiv. p. 297, 1890), Amann (*Münchener Med. Woch.*, Nos. 9 and 10, 1890), and Leclerc (Inaug. Diss., Strasburg, 1891), in Germany; A. Mijnlieff (*Nederl. tijdschr. v. Geneeskunde*, vol. i., 1890), in Holland; Trossat (*Lyon Med.*, March 30, 1890), and Vinay (*Arch. de Tocologie*, xix. pp. 365 and 417, 1892), in France; and Addinsell (*Brit. Med. Journ.*, July 22, 1893), in England, have all written on this subject. Further, a discussion in which many well-known German obstetricians and gynecologists (*e.g.*, Sänger, Hennig, Hertzsch, etc.) joined, took place at a meeting of the Obstetrical Society of Leipzig (*Centr. f. Gyn.*, xiv. p. 619, 1890); and finally, it will be remembered that Felkin read an interesting paper on "The Influence of Influenza upon Women" before this Society in December 1891 (*Edin. Obstet. Trans.*, xvii. p. 49). Since Felkin's communication was discussed we must all have seen many cases of influenza in pregnant and parturient women, and it has therefore seemed to me that the subject might with profit be reconsidered. The present paper is intended to be suggestive rather than exhaustive.

I. Influenza and Gynecological Cases.

a. Menstruation.—In two cases reported by Felkin, the occurrence of an attack of influenza would seem to have hastened the first appearance of the menses; one patient was ten years old, the other was twelve years and three months. I have, with one doubtful exception in a girl of eleven, seen no case resembling these. Further, it seems probable that the discharge in these instances was not truly menstrual; but Dr Felkin may, perhaps, be able to clear up this matter by telling us whether the red discharge has in his patients recurred at monthly intervals or not. Mijnlieff reports a case in which a sharp attack of influenza determined the first appearance of the menses, whether prematurely or not I am unable to say.

It is also doubtful whether we can regard as truly menstrual the red discharge which occurred synchronously with an attack of influenza in one of Felkin's cases, a woman of 49, whose menopause had taken place five years previously. Here, again, the later history might give an indication of the nature of the phenomenon.

Gottschalk, Mijnlieff, and Biermer (quoted by Gottschalk) have noted the fact that influenza may cause the appearance of a red vaginal discharge in patients with amenorrhœa. In one of Gottschalk's cases the uterine appendages had been removed for disease, and a premature menopause had followed; but the occurrence of influenza brought about a copious blood-loss. I have no personal experience of such cases; but perhaps some of our laparotomists may throw some light upon this subject.

Most writers have noted that when influenza attacks a woman at the time when her menstrual flow is due, the blood-loss is greater and the period lasts longer. I have seen several instances of this, and I may add that as a general rule the menstruation is accompanied by much pain and by an irritable state of the bladder. The intense sacralgia which occurs in such cases may be due partly to the influenza and partly to the menstruation.

By far the most common menstrual irregularity that is met with in connexion with influenza is metrorrhagia. This has been noted by Gottschalk, Felkin, Müller, Hennig, and others. An intermenstrual red discharge begins on the first or second day of the disorder, and lasts for five or six days. The patient usually expresses her surprise at becoming "unwell" again before her proper time. I have seen a large number of such cases, and have noted in connexion with them that the occurrence of the red discharge did not prevent the return of the menstrual flow at her proper time; the patients were "unwell twice in the same month." Both Gottschalk and R. Müller observed that when metrorrhagia was present the uterus was enlarged (1 to 1·5 cm., as determined by the sound) and softer than normal; it had, according to the former writer, a consistence very like that found in pregnancy. The ovaries were not affected in their cases; but Felkin was of opinion that ovarian irritation was the most important cause of the menstrual irregularities in his patients. It was noted by Müller that hydrastis canadensis, hot douches, and ergot (in the usual dose) had no effect in checking these hæmorrhages. I did not find it necessary to employ astringent remedies in any of my cases, so cannot express an opinion upon this point.

With regard to the cause of these red vaginal discharges in influenza, it seems most probable that they are due to acute endometritis, and are therefore similar in origin to the hæmorrhages from the genitals met with in scarlet fever, typhoid, etc. Felkin, however, gives weight to ovarian irritation as the determining factor, and Mijnlieff notes in addition to the endometritis-theory another possible explanation. According to this the specific pathogenic germs of influenza, acting upon the respiratory and digestive mucous surfaces, set up reflexly vasomotor disturbances which lead to hæmorrhages from various organs, including the uterus; the germs also may yield a kind of toxine which acts directly on the vasomotor system.

I have found no mention made of leucorrhœa due to influenza; but in one of my cases the malady was followed by the development of a very tedious and persistent white discharge, caused apparently by chronic endometritis. It is possible that the acute endometritis which causes the hæmorrhage may become chronic, and so lead to leucorrhœa.

In one or other of the ways above-mentioned, influenza acts upon menstruation in many patients, but not in all, for some would appear to pass through the attack without any such developments. Whether or not menstruation has any effect in determining the onset of influenza must, to my mind, be left an open question. Brakenridge (*Edin. Med. Chir. Trans.*, ix. p. 124), however, would seem to answer in the affirmative, for he says that "the tendency of the disease to attack women about the menstrual period was in many cases a very noticeable fact."

b. Diseases of the Generative Organs.—We have now to ask the question whether influenza, besides increasing the menstrual flow and setting up metrorrhagia, leads to any structural changes in the pelvis, or influences the progress of already existing lesions.

Gottschalk related three cases in which parametritis followed influenza; in two of these the patients had never before had cellulitis, and all the other exciting causes of the disorder could be excluded, and in the third the inflammatory exudation took place in the position of an old parametic effusion. I have not met with any cases of pelvic cellulitis in connexion with influenza; but I have seen one in which a hæmatocele developed. The patient had an attack of typical influenza, but had no metrorrhagia with it; about a week later intense abdominal pain occurred, and the per vaginam examination revealed a soft swelling situated in the left broad ligament. There were no signs of inflammation then, or at any later period, and in a fortnight metrorrhagia set in and continued, notwithstanding treatment, for nearly three months. The patient was kept in bed during all this time, and made a complete but very gradual recovery. No trace of the hæmatocele could be felt at the conclusion of the illness. This case occurred in the winter of 1889-90, and it is a curious coincidence that the patient's sister, who lives in England, had recently a similar experience. She was attacked by influenza in the early spring of the present year (1893), and at the time when her menstrual flow ought to have appeared, suddenly developed intense abdominal pain. The pain persisted, and her medical attendant, a specialist in gynecology, found on examination a large elastic swelling lying behind and to the left side of the uterus. This he diagnosed as a hæmatocele, and treated expectantly. The patient progressed favourably for a time, but imprudently exerted herself too much and brought on a return of the internal hæmorrhage, and is still an invalid. In both these cases the internal bleeding would seem to have taken the place of the usual influenzic metrorrhagia, and in both instances the patient was married, but sterile.

With regard to the influence of influenza upon the growth of pelvic tumours, Leclerc reported nine cases (2 subserous myomata, 4 ovarian cystomata, 2 ovarian carcinomata, and 1 widespread cancer of the pelvic organs) in which he believed that the fever caused a very rapid increase in the size of the neoplasms. I cannot say that I have been able to trace any such influence in any of the cases under my charge, although I have carefully watched several patients with fibroid growths through moderately severe attacks of influenza; in fact, in one case I thought I was able to detect some shrivelling of the myomatous mass. Leclerc also noted a case in which he believed that influenza hastened the development of genital peritoneal tuberculosis. In a case which I was able to watch, the cervix was removed for cancer; some months afterwards the patient took influenza, which she said was exactly the same as the dengue from which she had suffered in India; severe pelvic pain set in after the influenza, and the cancer returned in the right broad ligament, but did not develop more quickly than usual. She died about two years after the operation.

II. Influenza and Obstetric Cases.

a. Pregnancy.—It is certain that pregnancy confers on the individual no immunity from influenza; but whether its occurrence in the pregnant state leads to abortion so frequently as Felkin's cases seem to show, must, I think, be regarded as doubtful. I certainly have seen few miscarriages which I could ascribe to influenza; but possibly I may have been more fortunate in this respect than my brother practitioners. Gottschalk and Müller both saw two cases and Mijnlieff saw one, and Trossart several, in which the gestation was interrupted by influenza; and Amann observed six in which the fœtus *in utero* died and was expelled some weeks later.

Chambrelent (*Gaz. hebd. sc. méd. de Bordeaux*, xiv. p. 195, 1893) also noted the intra-uterine death of the fœtus at the eighth month in a patient suffering from influenza; but in this case the malady was complicated by a severe attack of diarrhœa. In the discussion that followed the reading of Chambrelent's paper, Moussos expressed his belief that influenza very often led to abortion and premature labour, whilst Hirigoyen, on the other hand, stated that the health reports of Bordeaux for the year showed a very small number of premature births. When abortion does occur, it may possibly be due to a morbid condition of the decidua (hæmorrhagic endometritis), such as Slaviansky noted in connexion with cholera, or to general microbic blood-poisoning, or to death of the fœtus or embryo from intra-uterine influenza. It is, however, certain that many pregnant women take influenza without aborting, and doubtless the difference in opinion expressed by various authors on this point may be due to differences in the severity of the attack, and to the presence or absence of serious pulmonary and cardiac complications (as in some of Vinay's cases).

b. Labour.—In a few cases I have seen an attack of influenza coincide with the occurrence of labour at the full time; in one of these forceps were required for the weakness of the uterine and abdominal explusive powers, in another there was considerable bleeding in the third stage, and in another there was alarming post-partum hæmorrhage. In other cases the labour does not seem to be seriously affected by the influenza. In my opinion a simple uncomplicated attack of influenza will most commonly delay labour by weakening the expulsive efforts, and have no further injurious influence.

c. Puerperium.—Influenza occurring during the puerperium may at first sight be confounded with septic puerperal fever; but the differential diagnosis is not difficult. The absence of any special symptoms referable to the uterus and annexa, the persistence of the lochia, the absence of the temperature curve of puerperal fever, and the presence of the distinctive symptoms of influenza (coryza, bronchitis, cephalalgia, pain in the back, depression, and weakness) will usually enable us to distinguish at once between the two conditions. In a case which I saw about a fortnight ago, all these distinguishing features were well marked. Possibly the absence of pathogenic germs from the lochial discharge in influenza might be used as a confirmatory test. Puerperal influenza has sometimes proved fatal, although I have not personally seen such a case. Thus Sänger noted a case of sudden death from heart failure in the fourth week after delivery in a weakly woman suffering from influenza and double pneumonia, and Hertzsch observed a case in which a phthisical patient suffering from grave pneumonia and influenza died on the fourth day post-partum.

d. Lactation.—I have not found it necessary to order the suspension of lactation in any of my cases, although in one instance I supplemented it with artificial feeding; but it would, of course, be necessary to do so if the influenza were of a grave type, and especially if it were complicated by serious pulmonary or cardiac affections. Vinay, from his experience, comes to a very similar conclusion.

III. INFLUENZA AND PEDIATRIC CASES.

Since the beginning of the present epidemic of influenza, some four years ago, several important papers on this disease as it occurs in infancy and childhood have appeared, including those of Strassmann (*Zeitschr. f. Geb. und Gyn.*, xix. Heft 1), Carstens (*Jahrb. für Kinderheilk.*, xxxi. p. 312), Flesch (*Jahrb. für Kinderheilk.*, xxxi. p. 442), Kormann (*Wein. Med. Blätter*, Nos. 51 and 52, 1890), Townsend (*Archives of Pediatrics*, viii. p. 24, 1891), Pestalozza (*Archivio italiano de Pediatria*, x. p. 197, 1892), and Dauchez (*Rev. mens. des Mal. de l'Enfance*, July 1890).

a. In the New-Born Infant.—There is nothing inherently improbable in the statement that influenza may be congenital or may develop during the first days of life, for I have during the last twelve months reported cases of congenital measles and scarlet fever to this Society, and there is no reason why influenza in the mother should not in a similar way be transmitted to the fœtus *in utero*. Further, I have seen at least one case lately in which the diagnosis of congenital influenza was to my mind quite clear. The mother had an attack of influenza about a week or ten days before her confinement, and the fœtal heart-beats were more rapid than usual (148 per minute) on the day preceding labour, so that it was expected that the child would be a female, or at least a small male. When the infant was born it was found to be a large boy, and for some time respiration could not be established on account of the large amount of mucus in the mouth and pharynx. In a few hours coryza was very evident, although the child had been warmly clothed at once. A large quantity of clear fluid passed from the nose. "Snuffles" was a prominent symptom, and there was marked restlessness and sleeplessness. There was no very evident lachrymation. There was, however, no diarrhœa, neither was there constipation; but the stools remained green after the usual time allowed for the expulsion of the meconium. The respiration and pulse-rate were quicker than normal, but the temperature was not much elevated. In about ten days the child was quite well.

Felkin reported one case possibly of the same kind. Townsend observed a male infant that had *in utero* a pulse-rate of 164, and sneezed violently immediately after birth; the temperature rose as high as 104°, the respiration was 100 to 140 per minute, and the pulse 200; there was much coughing and sneezing, but no signs of pneumonia, and recovery followed. The mother's confinement had occurred a week after the onset of an attack of influenza. Barton recorded a case of congenital influenza (*Brit.*

Med. Journ., vol. i. for 1890, p. 477), in which the infant died on the third day. Finally, Strassmann reported eight cases of influenza in infants varying from three to fourteen days old ; there was death in one instance from pneumonia, and in all there was loss of weight, a subnormal temperature, and either diarrhœa or constipation.

b. In Infancy and Childhood.—In the discussion following the reading of Townsend's paper, several pediatrists (*e.g.*, Northrup, Fruitnight, Holt, and Dorning) expressed themselves as convinced of the rarity of the occurrence of influenza in early infancy, and stated that it rarely was met with before the second year of life ; and Dauchez has dwelt upon the relative immunity from influenza which children enjoy. The last-named writer found that in 165 cases of influenza only 32 occurred in children, and that in them no deaths took place. He therefore emphasized the benign character of influenza in childhood, as well as its rarity. Now, whilst in the epidemic of 1889-90 and 1890-91, I cannot call to mind any cases of influenza in children occurring in my practice, I can remember many such in the visitations of this winter and last winter. It will be an interesting fact if it can be proved that in some years the disease has attacked the children and has left them free in others.

Kormann has pointed out that influenza in children has certain peculiarities. At the beginning, which in well-developed cases is usually as abrupt as in adults, fever and cerebral symptoms are of primary importance, but marked chills are rare. Convulsions and drowsiness are sometimes met with. In older children cephalalgia and pain in the back and limbs are complained of. Complications, such as bronchitis, pneumonia, caseation of the bronchial glands, acute miliary tuberculosis, and tubercular meningitis, are more common in infants than in adults (Dauchez states that complications are rare). Disorders of the nervous system are marked, and not uncommonly eruptions of an erythematous or urticarial nature are met with. In some instances gastro-intestinal troubles predominate. Carstens' conclusions were somewhat similar, but he thought that the disease usually began more gradually than in adults, that the cough was usually of a more or less convulsive character, and that constipation was rather more frequent than diarrhœa. These peculiarities are just the very ones that the study of other infectious fevers in children would lead us to expect.

Baginsky (*Arbeiten aus dem Kaiser-und Kaiserin-Friedrich-Kinderkrankenhause in Berlin*, Bd. ii. p. 5, 1893) states that he has met with four types of influenza in children—(1), uncomplicated ; (2), with complications in respiratory system ; (3), in nervous system ; and (4), in gastro-intestinal system. I have personally been specially struck by the marked character of the pharyngeal, gastric, and cutaneous symptoms in the influenza of childhood. In certain instances the diagnosis from scarlet fever was rendered difficult by the presence of pharyngitis, a thickly coated tongue, and a scarlatiniform rash on the chest; but the after-history and the occurrence of other cases of influenza in the same house usually served to clear up what was doubtful. I have also seen patients who showed the typical nervous phenomena (cephalalgia, facial neuralgia, pain in the back, etc.), and others who exhibited rather the catarrhal type (coryza, lachrymation, bronchitis, etc.).

The general conclusion that I have drawn with regard to influenza in relation to gynecological, obstetrical, and pediatric cases is that it acts in a way very closely similar to that of any of the other fevers, such as scarlet, typhoid, measles, small-pox, etc., but of course its own distinctive characters must not be lost sight of in this generalization. I have said little or nothing about treatment, for it has not been my wish to enter into a discussion of influenza in general; but I may say that phenacetin in the early stages, and citrate of iron and ammonia in the later, have been my favourite drugs. With regard to any special gynecological or obstetrical interference, I have generally pursued an expectant plan, but have also, in some cases, used forceps to shorten labour, and have carefully watched for any alarming degree of hæmorrhage. So far, however, I have been so fortunate as not to have had any deaths from influenza.

VII.—CLINICAL LECTURE ON A CASE OF SPINAL INJURY.

By Alexander James, M.D., Physician to the Royal Infirmary.

D. G., æt. 28, a miner, was admitted to Ward 30 on Nov. 6th, 1893, complaining of muscular weakness, and of a feeling of coldness and numbness in the legs, dating from a severe injury to his back sustained on Dec. 6th, 1892.

History: *Family.*—His father, aged 59, is a healthy man, but has suffered at times from dropsy. His mother died of cholera; and he has six brothers and one sister, all alive and well. He has always had plenty of good food, and has never drank so much as to prevent him going to his work. He used to smoke as much as 6 oz. in the week, but for the last five years has not smoked more than 2 oz. At home he is quite comfortable, but he is much exposed when at work, especially as latterly he has worked in a Welsh mine at a very great depth. He has always been strong and healthy, and had no accident till the one now to be referred to. This happened on Dec. 6th, 1892, when, just as he was beginning work, a large mass of coal fell on his back, and he remembers nothing till he recovered consciousness nine days afterwards. On the tenth day after (Dec. 16th) he was admitted into Llanelly Hospital, where he was told he had broken his back, and that three of his ribs had also been broken. At that time he states that he suffered intense pain over the small of his back, which shot down both his legs and up to his head, and also a severe headache, which lasted for months. He had also lost power completely in his legs, and he had no feeling in them, nor, indeed, from his waist downwards. He states also that his arms were paralysed, and that his breathing was very laboured. He had no loss of feeling in his arms; he could eat his food fairly well, but he experienced a difficulty in speaking, and he noticed that his sight was not so good as it had been. He had complete loss of control over his bladder and rectum. He remained in hospital at Llanelly for three months, during which period he made some improvement. The power in his arms returned after about a month, and about this time also he recovered control over his bladder and rectum. He then returned home, and was treated with the faradic current, which he says relieved considerably the pain in his back, and seemed to restore the feeling in his legs to some extent. In May last he came back to Scotland, at which time his legs were still paralysed. On one day in August last he noticed that there was more feeling in his right leg, and he found that he could move his right thigh on his abdomen. At this time he was taking strychnia by advice of his doctor, and he seems on one occasion to have taken an overdose by some mistake of his own. He described to us how, immediately after he had swallowed this, he experienced the most terrible tremors through his body,—his jaws were locked, and he lost both vision and the power of speech, though his mind was quite clear. Emetics were administered, but did not make him vomit, and gradually his bad symptoms improved, but he says that ever since he has had tremors through his muscles from time to time. He, however, continued gradually to improve, and the power in the left leg returned sufficiently to enable him to walk with the aid of two sticks. He says, however, that trying to walk always causes pain over the lower part of his back and down his left side. About four months ago he had severe pain in his stomach, which caused him to vomit; he also had severe palpitation and giddiness after taking food. About this time, too, he noticed a feeling of formication on the front of his right leg, and this has occurred several times since. He then sought admission to the Infirmary, and was taken into Ward 30.

State on Admission.—Height, 5 ft. 4 in.; weight, 8 st. 11 lbs., used to be 10 st. 4 lbs. Development good, though muscles are soft and flabby. The muscles of the legs appear the most reduced. The spine of the first lumbar vertebra is prominent, and there is pain on pressure over it, and, indeed, over all the lower dorsal, lumbar, and sacral spines.

NERVOUS SYSTEM: *Sensory.*—He has an aching pain over the lower part of his spine and left side, and a feeling of coldness, specially over the sacrum. There is a feeling of numbness over the front of the left thigh, disappearing over the front of the knee, but becoming marked again over the front of the leg and the dorsum of the foot. It is also marked over the dorsum of the right foot and the front of the right leg. The sensibility to touch, pricking, and temperature is lost over these parts, and careful testing shows that over the lateral and posterior aspects of both legs these sensibilities are also impaired. But it is noteworthy that the sensibility in the soles of the feet is much better marked than in the legs.

Motor.—Voluntary motor power over the muscles of the thighs is fairly good; over the muscles of the legs, on the other hand, it is markedly lost. This can be seen very well when the patient sits on the edge of his bed with the legs allowed to hang down. It is then seen that, although the muscles of both limbs are much smaller than normal, the leg muscles are much more reduced than those of the thigh, and that when he is asked to move the foot on the leg at the ankle-joint, little or no movement occurs, while when he is asked to move the leg on the thigh at the knee, the movements, both of flexion and extension, are briskly performed. In cases like this it looks almost as if these latter movements were more briskly performed than in a normal individual, as, indeed, the thinned leg must be lighter to move, and so give specially easy work to the thigh muscles to perform. When we examine these weakened leg muscles more particularly we find that the tibialis anticus and peroneus longus and brevis are specially affected, in consequence of which he cannot dorsiflex, abduct and adduct his foot. But the muscles of the back of the leg are also affected, his power of pointing the foot being limited. These voluntary motor impairments are most marked on the left leg.

Reflexes: Superficial.—Plantar are present on both sides, specially on the right. Cremasteric are also present, and abdominal are well marked. *Deep.*—The ankle-jerks are well marked on both sides, and on both sides clonus can be elicited. The knee-jerks are markedly absent on both sides, and there is not the slightest trace of clonus, either on tapping the patellar tendon with the leg semiflexed, or on suddenly and forcibly drawing down the patella when the legs are straightened out.

Electric Irritability of Muscles.—Whilst the muscles of the thighs respond fairly well to the faradic current, the muscles of the legs, specially those just named, require a very powerful current, and respond very feebly. This is specially the case with the tibialis anticus in both legs. With the galvanic current very strong currents are required, and the polar reaction is the normal one,—that is to say, K C C is greater than A C C. There is thus no reaction of degeneration.

Cerebral and Mental Functions.—Intelligence is good, but he has a feeling of torpor, which often lasts all day, and gets worse at night. On trying to go to sleep he experiences a feeling as if he were dreaming, and he then feels as if he were going to faint. This causes him to rouse himself with a start, and so he often does not sleep all night, and never sleeps more than three hours on end. His memory, specially during the torpid states, is very much impaired, and he notices that he remembers events of his childhood more easily than recent events,—that is to say, than events which have happened since the accident. He states also that his hand is very shaky, and causes him difficulty in writing.

Special Senses: Sight.—Since his accident this is impaired for distant objects; he cannot tell the time on the clock at the other end of the ward. For near objects his sight is good enough, but he says his eyes water greatly. On examination his pupils are found to react normally to light and in accommodation, and no changes can be detected with the ophthalmoscope. His other special senses are normal.

Locomotory System.—He can walk with the aid of a stick, but the feet hang down, and he has to raise them high to keep the toes off the ground. On standing with his feet together he sways considerably, but on shutting his eyes this swaying is not increased.

Alimentary System.—Teeth are bad; tongue fairly clean and moist; no tremors to be noticed. He has a sticky feeling in his mouth, and thinks there is less saliva than formerly. Appetite poor, and often feels thirsty. After taking food he is much troubled with pain in the stomach, and with flatulence. Used to vomit much after food, but not for the last ten days. Bowels confined, and has constantly to be taking medicine; says that if stools are not loose he has great difficulty in expelling them. Physical examination of the abdominal viscera shows nothing abnormal. Except that he suffers occasionally from palpitation, the circulatory system is normal, as is also the respiratory system.

Integumentary System.—His skin always tends to be moist, and he states that this is especially the case over the anæsthetic areas of the leg.

Urinary System.—Normal; no increased frequency of, or trouble in, micturition.

The diagnosis at which we have arrived is that there has been an injury to the vertebral column and spinal cord about the lower dorsal and upper lumbar regions, and that this has resulted in gross changes in the cord at the part and in less marked changes above. To understand this properly I shall ask you to consider with me—(1), the injury; (2), the changes in the cord at the part and below; (3), the changes in the cord and parts above.

(1.) The Injury.—This I believe to have been one of fracture with dislocation: you can understand that, locked together as the vertebræ are by their articular processes, these two—fracture and dislocation—almost certainly occur together.

Observe next that the locality where this fracture and dislocation have occurred is a very usual one, viz., about the last dorsal and first lumbar vertebræ. This you can understand when you remember the nature of the injury. The man was standing, stooping somewhat, when the weight fell on his shoulders and back. Now the dorsal vertebræ, with the ribs, sternum, and intercostal tissues, form a sort of hollow cylinder, a very strong structure, and so can well resist a strain. Hence the effects of such will fall upon the nearest point in the comparatively weak and small column below, viz., the first lumbar vertebra.

[For the same mechanical reason you can understand how another part of the vertebral column, viz., the lower cervical vertebræ, are also specially liable to suffer from injury in a similar manner. This is the weak part immediately above, as it were, this strong hollow cylinder.]

As the result of this displacement the spinal cord may have been injured in various ways. It may have been pressed upon and narrowed by the lower fragment. There may have been some tearing of the dura, although this seems to be rare; there may have been hæmorrhage from parts around the cord, or, with more or less laceration of the cord itself at the part, there may have been hæmorrhage into its substance. Of whatever nature it may have been, it must have been a very severe lesion.

As further indicating the severity of the injury, we find that the patient was insensible for nine days, but that when he recovered consciousness, not only had he paralysis and anæsthesia from the seat of the injury downwards, with loss of power over bladder and rectum, but he had loss of power over his arms, and difficulty in breathing, lasting for about a month.

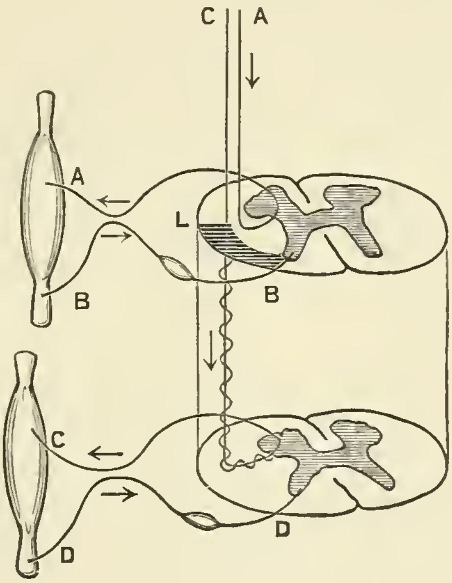
These latter symptoms, I believe, were due to concussion. We know that cases have occurred where paralysis and loss of consciousness followed injuries in which there had been no fracture or dislocation of the vertebræ at all, and in which, on post-mortem examination, no lesions of cord or brain could be discovered. In such cases we may suppose that as the result of the shock all nerve functions had been suspended,—just as, as Reynolds has put it, a piece of iron can be demagnetised by a heavy blow. In this case the shock must have been a specially severe one, abolishing his cerebral functions for nine days, and his spinal for about a month.

(2.) Changes in the Cord at the part and below.—It is certain that the injury to the cord which had caused abolition of function by shock above, must also have caused similar abolition below, and the return of control power over bladder and rectum after about one month's time might possibly be regarded as indicating that the lost power over these viscera had been due to shock rather than to direct injury to their centres and connexions in the cord.

It is almost certain, further, that as the result of the injury directly, or of a myelitis which is apt to follow such an injury, some sclerotic changes have occurred, and the question now is as to where these will be.

Are they in the grey matter? I do not think so to any extent. The bladder, rectal, and genito-spinal centres are intact, and the centres for the ankle-jerk and plantar reflexes are so also. Further, there is no muscle degeneration nor tendency to bedsores. Are they in the white matter, the connecting part of the cord? I think so certainly.

Looking at the subject theoretically, it is evident that we have to deal with a lesion which interferes with both motion and sensation, and probably the best way to explain this condition will be to invite your attention to the accompanying Diagram. This is intended to represent a longitudinal section of the spinal cord. In it A A represent the tracts to the muscles of the thigh, with B B as the muscle sensory nerves corresponding, whilst C C represent the motor tracts to the muscles of the leg, with D D as their corresponding muscle sensory nerves. It is clear that a lesion in the region of the shaded area L would cause the motor and reflex phenomena which our patient presents, for it would leave his voluntary motor power over the muscles of the thigh unimpaired, and deprive him of voluntary motor power over the muscles of his leg; whilst it would at the same time explain the increased ankle-jerk and ankle clonus, and the absence of knee-jerk and knee clonus.



Similarly with sensation. To represent this diagrammatically a somewhat complicated diagram would be required; but remembering that the skin sensory fibres do not remain long in the white matter, but having entered the grey matter pass from it back again into the white, and are conducted upwards in the posterior or lateral columns, we can easily imagine that a lesion in the position of the shaded area might cut the sensory fibres from the legs or thighs, and at the same time miss the sensory fibres from the feet. In our patient, as has been stated, sensation in the soles of the feet is not much impaired, whilst in both legs and in the front of the left thigh it is more or less abolished. Referring now to Gower's table, the required portion of which I append.

MOTOR.	(NERVES.)	MOTOR.		SENSORY.		REFLEX.
	L 1		1	Groin and Scrotum (front)	1	Cremasteric
Lumbar muscles	2	Cremaster Flexors of hip	2	Thigh: outer side front inner side	2	*Knee-jerk*
	3	Extensors of knee Adductors of hip	3		3	
Peroneus, l. Flex. of ankle, Ext. of ankle	4	Ext. & abduct. of hip	4		4	Gluteal
	5	Flexors of knee	5	Leg, inner side	5	*Foot-clonus*
	S 1	Intrinsic muscles of foot	1	Buttock, lower part Back of thigh Leg & foot except inner part	1	Plantar
	2		2		2	
	3	Perinæal and anal muscles	3	Perinæum and anus	3	
	4		4		4	
	5		5	Skin from coccyx to anus	5	
	Co.		Co.		Co.	

We are disposed to put such a lesion in the cord somewhere about the cord-centres for the third or fourth lumbar nerves. That is to say, about a point opposite the junction of the last dorsal and first lumbar vertebræ. Of course other possible explanations of the symptoms might be given, notably the possibility of some lesion of the "cauda equina," but we need not trouble ourselves further with what could be only hypothetical.

3. Changes in the Cord and parts above.—In the cord above there are probably some changes of the nature of ascending sclerosis, but what I wish to draw your attention to now is his complaints of torpor, disturbed sleep, impaired memory, impaired sight, headaches, pains in the back and side, palpitation, etc. These are all symptoms which one meets with after concussions, and they are interesting, because they remind us of the train of symptoms which we hear of and see in the so-called cases of railway spine. As you know, after railway collisions it is common for a number of people, who of course have not been killed or have not lost limbs, but who have been simply "shaken," to develop such symptoms weeks or months after the accident, and presenting no objective signs of disease in brain cord, special senses, nerves, muscles or viscera, to declare themselves injured for life, and to claim compensation. Such individuals are apt to be looked

upon as malingerers; but in our patient there is no inducement to malingering, and these symptoms are present. Their cause is not at all known. For the back pain, some irritation about the nerve roots has been suggested. It is evident that in an accident such as this man has sustained, the parts around must have been injured, hence we might expect pains here, as after fractures or severe bruises elsewhere.

As regards Prognosis.—The prognosis in injury to the spine is always better than in disease, as myelitis, lateral sclerosis, etc., and a further favourable point in this case is that improvement has occurred. But although I think we may expect some further improvement, I do not take a very hopeful view of the case. The presence so markedly of the so-called concussion symptoms seem to indicate that the severe injury has, as it were, taken so much out of him that we cannot expect him to present much recuperative power.

Treatment.—He is being treated by massage and electricity, galvanic and faradic, to his muscles. He is advised to walk about as much as possible, short of fatigue. For the back pain we are trying the application of the faradic current, as we do in lumbago. Were it to become very severe I should have no hesitation in using the cautery. He is getting strychnia and nerve tonics internally.

Part Second.

REVIEWS.

Anæsthetics and their Administration. By F. W. Hewitt, M.D. London: Charles Griffin & Co.: 1893.

The subject of *anæsthesia* is one of supreme importance. Anæsthetics are administered to great numbers of individuals daily, and the aggregate number of administrations in Great Britain alone must be about 100,000 per annum. Every medical man should be able to administer an anæsthetic, and in the interests of the public it is necessary that the production of anæsthesia be thoroughly understood by every practitioner.

Since 1847, when chloroform was introduced and shown by Sir James Simpson to be at that time a more suitable drug for the production of anæsthesia than ether, a controversy has raged in reference to the respective merits and demerits of the two drugs. Nearly twenty years later it was clearly demonstrated that nitrous oxide was more convenient than either of the others for operations the performance of which occupy a very short time. The state of affairs to-day regarding the administration of chloroform is much as it was in 1855, when Professor Syme published a lecture in the

Lancet, in which he stated that "there are important differences between the mode of administration of chloroform here [Edinburgh] and in London. There great attention is paid to the number of drachms or minims employed; here we are entirely regardless of the amount used, and are guided only by the symptoms of the patient. We use no apparatus whatever, take the respiration for our guide, attend to the condition of the tongue, and never continue beyond the point when the patient is fully under the influence of the anæsthetic."

In all the more recent books on anæsthesia, where the administration of chloroform is described, we find that the authors depart from these guiding principles and advocate other points for observation, and thus distract the administrator's attention from the most important. This point in administration has received much attention in the various discussions arising out of the report of the Hyderabad Commission, where Professor Syme's rule is particularly emphasised.

In Scotland and India chloroform is the drug almost invariably chosen for routine practice, whilst in London and America ether is that employed. It is, however, generally admitted that in hot climates, such as India, chloroform is a necessity, while in colder climates either drug—*i.e.*, ether or chloroform—may be used. Two opinions directly at variance with each other are advanced,—the one, that ether should be invariably chosen unless, and that is rarely, it be contraindicated by the state of the patient or the special operation; the other, that chloroform should be the drug in routine use, and that it is only in rare instances that ether, or combinations of ether and chloroform, should be exhibited. We believe that there is truth on both sides, and that in the hands of skilful administrators, in the majority of patients either drug can be safely administered. The question which requires settlement is not whether, in the hands of specialists or those who have had exceptional facilities to administer the drugs, chloroform or ether is the safer anæsthetic, but rather which is the better adapted for routine practice by medical men generally. It is easy for "anæsthetists" to discuss from experimental and clinical observation the action of anæsthetics on the heart and respiration, and to draw deductions regarding their respective merits; but what of the country practitioner, or the ship surgeon, or the surgeon in time of war? Is ether in their hands safer than chloroform? We deprecate the tone of the medical journals on this question. Where one almost feels as he reads the heading, "Another death from chloroform," that the editor deems it is not altogether a misfortune, but perhaps a good, inasmuch as it may help to give the death-knell to the routine use of the drug. The highest authorities differ as to the best, and that is the safest, means of administering ether. Can it be safely given by the open cone, or is it necessary to use special apparatus, is a question still *sub* *judice*, and until it is shown that ether administered by a novice or unskilled person is equally safe with chloroform given under the same circumstances, we think no such canon as Mr Jonathan Hutchinson proposes (*vide* page 13) should be authoritatively suggested. During the last few years the importance of the subject of anæsthesia and the difficulties surrounding the safe employment of anæsthetics has produced men who devote their whole time to the teaching and administration of anæsthetics. We believe that it is of the greatest moment that this subject should be taught in hospitals where men are being prepared for the practice of their profession, and also that the surgeon must operate more satisfactorily when he has confidence in the administrator; but what of the men who have merely the theory of administration without the actual practical experience? Frequently the gravest surgical procedures have to be performed by practitioners who are far from skilled assistance. In such circumstances, in which drug, ether or chloroform, can most reliance be placed?

We agree with the author that the important difference between ether and chloroform, when skilfully administered, is that the line between danger and safety is small with chloroform, and that it may be larger with ether. At the same time we believe the difficulties of ether administration are greater than those of chloroform, and when the practitioner is single-handed during an operative procedure it is very doubtful whether the balance of safety is not on the side of chloroform.

It is impossible to review within reasonable space the ground covered in Mr Hewitt's work, in which the whole subject is very fully discussed, but from a very careful study of the book we are satisfied that it may be placed in the hands of the student as a safe guide during his study of anæsthetics; and further, that the practitioner may trust the information which it gives as reliable for his guidance in difficult cases. There are, however, several instances where the statements made are not sufficiently amplified, and the deductions left to be drawn by the reader may lead to error. Thus, at page 33 reference is made to "transient reflex effects upon the heart's action at the moment an incision is made, or some other procedure is carried out, more especially during a light anæsthesia under chloroform." The author states "that it is highly probable that such effects may be prevented to a great extent by a very deep anæsthesia, but even this fact is not certain." Elsewhere in the text it is pointed out that fatalities occur even in strong healthy young adults during trivial operations. Have these patients at the time of the operation been thoroughly anæsthetised? We would have wished to see noted in much more definite terms that, *however trivial, and of however short duration the operation may be, before it be commenced the patient should be completely anæsthetised.* This is a point to which deservedly the Hyderabad Commissioners have drawn special attention (*vide* No. viii.

Practical Conclusions). Another point referred to frequently is special apparatus for the administration of the anæsthetic; and although the author contrasts their respective advantages, and describes lucidly how to use them, we think he bears too much stress on their value, and tends to make the administrator trust to the apparatus rather than endeavours to impress upon him that whatever apparatus may be used, the *only guide* must be the effect of the drug as evinced by the patient. The necessary guides to indicate complete and safe anæsthesia previous to operative procedure are not sufficiently distinctly pointed out; and in our opinion too much reliance is placed on the state of the conjunctival reflex, character of the breathing, and the state of the pupil, while too little attention is directed to muscular relaxation and the effect of some slight external stimulus, such as pinching the skin. Frequently it is observed that the patient is breathing satisfactorily, that the pupil is contracted, and the conjunctiva insensitive, but at the moment some slight painful stimulus is applied the pupil partially dilates, and reflex action occurs. It is well known that the conjunctiva readily becomes insensitive in children, while it remains sensitive long after reflex action is abolished in old persons.

The variations in the size of the pupil are elaborately considered throughout the book, and Mr Hewitt, to judge from the space devoted to this subject, seemingly considers such variations of no little importance. No doubt the state of the pupil, along with other signs, is of value, but we think that as a general rule little reliance can be placed upon its variations. There are two points to which we would more particularly refer—(1), that no mention is made of its state of contraction during sleep; and (2) that the variations noted in many cases, which the author quotes, were probably due to reflex action, the patient having been partially wakened by pain, the anæsthesia at the moment not being sufficiently profound. In sleep the pupil is normally firmly contracted, as can be observed in cases of exophthalmos, or in other patients where the pupil can be observed during sleep. Indeed, if we raise the eyelid of a patient sleeping soundly after anæsthesia, we can readily note the contracted pupil, and further observe that if the patient be even partially aroused by pinching, that wide dilatation at once occurs. Several cases quoted by the author where variations were observed, were, we believe, in patients merely asleep, not fully anæsthetised, and hence the dilatation noted. At the same time we believe, with the author, that a moderately or firmly contracted pupil is usually associated with safety, while a widely dilated pupil may be a sign of danger.

This book shows a wide knowledge of the subject, and is well worthy of the most careful study by all who have to administer anæsthetics. It is the most trustworthy book for reference on the subject with which we are acquainted, but for the student or junior practitioner it is too discursive,—there should be more focussing of the essentials of administration. In another edition this could readily be done by giving a concise *résumé* at the end of each of the sections on Nitrous Oxide, Ether, and Chloroform.

The illustrations are excellent, and the text has been carefully written. The different type used is an assistance to the reader, and the passages to which special attention has been drawn by italics are judiciously chosen.

Tooth Extraction: A Manual of the Proper Mode of Extracting Teeth. By JOHN GORHAM, M.R.C.S. London. Fourth Edition: 8vo.

THE fact of a fourth edition of this little work being published speaks to its usefulness. There is nothing new in it, but it is a very comprehensive and systematic *résumé* of what are generally considered the orthodox principles upon which extraction should be conducted. One interesting chapter contained in it, is that on the resolution of mechanical forces applied in tooth extraction; and although a knowledge of the mechanical powers employed in this operation will not of itself ensure surgical dexterity, it is yet of very considerable importance. Now and then a lingering fondness betrays itself for what appears to have been an early love—the relentless old "Tooth Key"; upon the whole, however, even this instrument seems less terrible than the device of grasping at one fell swoop gum, alveolus, and tooth, an expedient finding favour in some cases with the author. Much useful and reliable information will, however, be found in the pages of this little manual.

Movable Kidney and Intermitting Hydronephrosis. By G. D. KNIGHT, M.D. London: Baillière, Tindall & Cox: 1893.

MOVABLE kidney with its attendant evils has within the last few years become a clinical fact of importance, and is no longer a mere anatomical curiosity. The possible range of the kidney's wandering has to be remembered as a possibility in the consideration of difficult abdominal swellings. The above monograph upon an infrequent but interesting condition, *intermittent hydronephrosis,* which is occasionally associated with kidney mobility, was presented as a *thesis* for the degree of M.D. at the Aberdeen University. The author has used one case occurring in his practice as a text, and has worked up the literature of the subject very fully, and reviews the various theories regarding its production. He attributes the occurrence of the condition in his case by a kink of the ureter, and that such kinking of the ureter may occur in extreme cases of mobility of the kidney, we do not doubt; such an explanation, however, does not explain the occurrence of hydronephrosis in cases of slight movement,—for these Dr Knight enumerates many possible causes.

The monograph is of much practical interest, and will repay careful perusal.

Asiatic Cholera; its History, Pathology, and Modern Treatment. By J. A. WALL, M.D. London: H. K. Lewis: 1893.

THE present cholera scare has given rise to a considerable amount of literature on the subject, and Dr Wall's book deserves attention, as he was formerly on the medical staff of H.M. Indian Army, and he depicts the disease both as it exists in its home of the Delta of the Ganges, and also as it occurs in epidemic form in Europe. The author has not only studied the disease in India, but also in Europe. Probably the most valuable part of the book is the chapter on the treatment of the disease, and the one on the methods of arresting epidemics of infectious disease. He does not give any certain opinion as to the etiology of the disease, preferring to place before his readers the evidence he has collected, in order that they may form their own opinion. We should have preferred his opinion, as nowadays everyone is more or less acquainted with the varying theories as to the causation of the disease.

Beri-Beri; its Etiology, Symptoms, Treatment, and Pathology. By A. J. M. BENTLEY, M.D. Illustrated. Edinburgh and London: Young J. Pentland: 1893.

THIS treatise well deserved the gold medal which it obtained when presented as a thesis for the M.D. degree in 1889. Beriberi is a disease concerning which the etiology and pathology present many points of difficulty, and Dr Bentley has been fortunate in obtaining a thorough acquaintance with it, and has given us a detailed clinical account of 52 cases, and the post-mortem results obtained in 19. The ten illustrations are admirable, and give a vivid picture of the various phases of the disease; they well illustrate the principal phases of beri-beri. The book will be invaluable for those practising in the various regions where the disease is indigenous.

Ophthalmic Nursing. By SYDNEY STEPHENSON, M.B. London: Scientific Press Limited: 1893.

THIS little book is one of a series dealing with hospital and nursing matters, the particular one in hand being concerned with special points in the nursing of cases of ophthalmic disease. The author first gives a sketch of the anatomy and physiology of the eye so far as it is necessary for nurses to be acquainted with these subjects; then follow such considerations as application of remedies, bandages, preparation of patients for operation, use of anæsthetics, description of the commoner operations, with a list of instruments required for their performance, etc. There is a good index and a glossary of terms, to which a pharmacopœia might with advantage have been added. There is a great deal of useful information in the book, but there is also a serious lack of much that ought to be given. Under such a heading as "Ophthalmic Nursing" one might fairly expect to find instruction given as to the decubitus of patients who have been operated on for cataract; as to the use of stimulants, cough mixtures or opiates for such as need them; as to the special care of the very aged, who form so large a proportion of the oculist's patients; as to special precautions in case of diabetic patients and their food; as to the necessity of and means for combating that depression of spirits which so often accompanies even a temporarily enforced disuse of the eyes, etc. But Mr Stephenson is silent on all these subjects. A few words as to "first aid" in cases of injury to the eye would have been well inserted also. That is the chief fault which an otherwise useful little work has, that the specially ophthalmic element in the nursing has not been sufficiently kept in view, while much space is taken up with rules for the disinfection of instruments, and other matters which ought to be included in the surgeon's duty, and not in the nurse's. The description of methods for the cleansing of sponges might well be omitted on the ground that sponges ought never to be used in ophthalmic work. Mr Stephenson evidently expresses his own views when he says (p. 122), "Modern methods aim at asepsis and regard everything else as of minor importance." Whether this be true for the surgeon or student we will not discuss, but assuredly it is not true for the nurse, who ought to have nothing to do with a wound until it is healed,—whose functions are connected with the *patient* rather than with his malady. Chapter II., on the Germ Theory of Disease, is quite out of place in a work of this sort, while the useful hints (in Chapter XI.) on ophthalmia neonatorum ought to have been extended, as well as those on the care of persons recently operated upon (Chapter X.). The little experiment on page 14 is described exactly in the contrary way to what has been intended. Every nurse about to engage in ophthalmic work will derive benefit from the perusal of Mr Stephenson's book, but we would not advise her to follow all the rules he gives.

The Essentials of Chemical Physiology, for the Use of Students. By W. D. HALLIBURTON, M.D., F.R.S., Professor of Physiology in King's College, London, etc. London: Longmans, Green, & Co.: 1893.

A BOOK such as this, coming from one who is the author of a large and valued text-book on the same subject, is sure of a wide acceptance, especially as it practically breaks new ground. We are sorry that we can only give the work a qualified approval. In the first place, physiological chemistry, or chemical physiology, as our author chooses to call it, does not include histology. Notwithstanding this, he has thought fit to include many of the stock woodcuts so frequently used in histological works, for what purpose we are at a loss to discover. Again, his arrangement of the subject seems somewhat mixed, and he gives much of the work which we have hitherto regarded as pertaining to the Department of Public Health, such as the analysis of bread, flour, etc. On the other hand, his arrangement of the Lectures individually seems workmanlike. He begins by tabulating, at the head of each lesson, so many necessary experiments, then in the sequel explains and applies the results obtained. Thus in Lesson I. eight experiments are given for the identification of the carbohydrates and fats; the different members of these groups are then described, and their properties noted. In Lessons II. and III., in like manner, he takes up the proteids. We do not agree with his classification of these bodies, especially with the propriety of classing acid-albumin with the anti-albumin groups, but every one views the proteids differently. At the end of the book the essentials for a more advanced course are given, towards the end of the book containing particulars for the performance of quantitative estimation of various substances; and this is, indeed, one of the faults we would find with the book, that the first part is so elementary that it takes no note of quantitative examinations whatsoever. One who has gone through the simple tests of the first division is no further forward than any student of the ordinary classes of chemistry and physiology.

A short appendix is added, giving details for the use of the spectroscope, for the analysis of gases, and for Kjeldahl's method of N-determination.

Lewis's Diet Charts. London : H. K. Lewis : 1893.

THIS publisher has sent us a number of diet charts, forming, to use his own words, " a suggestive set of diet tables for the use of physicians, for handing to patients after consultation, modified to suit individual requirements." We do not know what responsible person has drawn these charts up, but they are arranged on a very good plan. First a general rule, then what the patient may take and must avoid. The charts are fourteen in number, one being blank. The other thirteen include nearly all classes of chronic disease which require dieting. We would have liked to have seen more attention drawn to the need of abstaining from fluids in obesity, while the chart for dyspepsia might have been drawn up in a more general form, as dyspepsia is a protean disease, and the diet must be varied accordingly. A more catholic choice would be preferable; the interdicted foods in each case could then be erased. The division for stimulants has very wisely been left vacant throughout. Altogether they will doubtless prove exceedingly useful to the busy consultant, and will do a great service if only by their means the patients can be induced to conform strictly to the diet laid down, so difficult a matter to achieve in many instances.

Mineral Waters of Harrogate. By JOHN LIDDELL, M.D. Edinburgh and London: Young J. Pentland: 1893.

DR LIDDELL gives a useful and concise account of the constitution, action, and use of the mineral waters of Harrogate. He has incorporated in it the results of his observations on their influence in the excretion of urea and uric acid. He finds that invariably during the administration of the waters the quantity of urea excreted is markedly increased. This increase is greatest during the first few days, but if the waters are continued for longer than four or five days the amount gradually fell, and continued to fall until the waters were stopped. The quantity of urea excreted, however, never fell to the average amount which obtained *before* the waters were given. An increased amount of uric acid was likewise excreted during the first few days of the administration of the waters, but the increase was only temporary, for the amount excreted usually fell, generally on the third day, to less than what it had previously been before the administration of the waters, and continued thenceforward at the lower level. When the waters were stopped, the quantity of uric acid voided returned to normal. Our author believes that the subsequent decreased excretion is due to a diminished production of uric acid, and this conclusion is supported by clinical evidence, for no symptoms of retention of uric acid can be observed, but, on the contrary, we find improvement in the condition of those exhibiting the uric acid diathesis. "The initial rise in the amount of uric acid excreted is probably due to an increased elimination caused by the large quantity of fluid being ingested and voided at the same time." Thus these observations lead to the conclusion that these mineral waters both diminish the quantity of uric acid produced and also accelerate its elimination. The little book is useful.

Health Resorts of the Canary Islands. By J. CLEASBY TAYLOR, M.D. London: J. & A. Churchill: 1893.

THE original of this work was a thesis presented to the Medical Faculty of the University of Edinburgh for the M.D. degree, and obtained the prize of a gold medal. After sketching the history, geographical and physical features of the Canary Islands and their meteorology, the author goes on to describe the distinctive features of the various islands with regard to their suitability as health resorts. His work has been performed with care, and is the best account of the Canary Islands from the point of view of health with which we are acquainted.

Homburg-Spa. By Dr ARNOLD SCHETELIG. London : J. & A. Churchill : 1893.

THE author of this book gives all necessary information with regard to the waters of Homburg and their use. It is not a compilation, and some of the writer's remarks will probably not be agreed to by his colleagues—we mean with reference to diet; nevertheless we believe that they are correct, and that the dieting at Continental spas, without reference to individual idiosyncrasies, is only too prevalent.

Hot and Medicinal Baths and the Treatment of Leprosy in Japan. By Professor W. K. BURTON. Illustrated.

THE people in Japan bathe in water far higher in temperature than is customary in this part of the world. The author has seen them actually bathing at a temperature of 128° F. So essential is hot bathing considered to the health of the people that the charge for the use of the public baths is but one cent. The pamphlet is interesting.

Ancient Egyptian Medicine; a Bibliographical Demonstration. Herophilus and Erasistratus. By JAMES FINLAYSON, M.D. Glasgow : A. MacDougall : 1893.

THESE two pamphlets are reprints of papers published in the *British Medical Journal* and the *Glasgow Medical Journal* respectively, and they are of great interest to those who seek information from ancient sources. They show considerable erudition and power of interesting analysis, and they give an idea of the position of medicine at a very early age, and show, too, that the fathers of medicine were not the crass empirics which present-day writers are too apt to suppose.

Brown's "South Africa." With Six Coloured Maps and Two Diagrams. London : Sampson Low, Marston, & Co : 1893.

THE object of this book has been to place in a condensed and easily intelligible form the mass of information necessary to tourists, sportsmen, invalids, and settlers. The compilation is successful, and the maps form a useful feature in the book. All proceeding to South Africa should possess a copy.

The Retrospect of Medicine; a Half-Yearly Journal. Edited by JAMES BRAITHWAITE, M.D. Lond. Volume 107. January–June 1893. London: Simpkin, Marshall, Hamilton, Kent, & Co., Limited; Edinburgh: Oliver & Boyd.

THIS publication keeps up its old reputation as a handy book of reference for the most important papers published during the past half-year in the domain of Medicine and Surgery. We would like to see more scientific papers noticed, even very shortly. The papers selected for inclusion, however, are, as usual, the cream of the clinical work which has appeared in the best journals. We can only repeat our former recommendation of the work.

The Narrative of a Busy Life; an Autobiography. By ARTHUR HILL HASSALL, M.D. London: Longmans, Green, & Co.: 1893.

THIS brief record of an active worker, investigator, and writer for little short of sixty years may be recommended to stimulate students to emulate the author, who has certainly contributed not a little to science during his busy life. Between the years 1840 and 1893 he contributed no less than 98 valuable and important papers on scientific subjects. On reading through the pages of his book one obtains a synopsis of the progress of medicine during half a century, and not a little interest may be culled therefrom. Dr Hassall may be proud of the record of his life's work.

The British Guiana Medical Annual and Hospital Reports. Edited by Drs J. S. WALLBRIDGE and E. D. ROWLAND. Demerara: Baldwin & Company, Georgetown: 1893.

WE are always glad to see the reports from our Colonies, for they show that away from the stimulus which residence among their colleagues provides, our brethren abroad keep up the traditions of the profession; and more than this, they send home interesting and valuable information concerning their work. The book before us, whilst not containing any startling new contribution, treats of a number of subjects of interest. There are two papers on vaccination, one on the distribution of tubercle in the body, one on native drugs and their uses, and papers on leprotic fever, operations at the leper asylum, Mahaica and malarial fever, all of which will repay perusal.

Inter-Colonial Medical Congress of Australia. Transactions of the Third Session. September 1892. Edited by L. R. HUXTABLE, M.B. Sydney: Charles Potter: 1893.

IT is impossible in the space at our disposal to give any detailed review of this interesting volume. It contains over 150 papers of varying length and interest read at the Congress held in Sydney, New South Wales, in 1892, as well as the presidential addresses. Australian practitioners of medicine may certainly be congratulated upon the interest and high scientific value of their volume of Transactions. It would be invidious to select any article for special comment.

Abnormal Man; being Essays on Education and Crime and Related Subjects, with Digests of Literature, and a Bibliography. By ARTHUR MACDONALD, Specialist in the Bureau of Education. Washington: Government Printing Office: 1893.

THIS book deals principally with what the author calls "charitology," under which good-natured title he includes the study of criminals, drunkards, and apparently men of genius, besides paupers, insane persons, and idiots. In the composition of the work Dr MacDonald shows both learning and judgment. After stating his own views, he gives us some well-written *résumés* of works and articles on these subjects by writers in the principal European languages. What strikes us as particularly interesting is the novel information he has collected about the influence of criminal suggestions through hypnotism. Though society seems to be in little danger from such attempts, medical men should know something about this subject, as they might be asked to give an opinion upon it. The chapter on Alcoholism is well written, and gives digests of a number of works by physicians whose views are worthy of attention. Morphinism is also considered. We are told by Levinstein that out of eighty-two male morphinomaniacs there were thirty-two physicians and six apothecaries. It thus appears that a knowledge of the properties and doses of opium is a dangerous thing. The chapter on "Insanity and Genius" is a reproduction of a number of statements, not all correct, about the eccentricities and nervous diseases of remarkable men and their relatives, gathered together in order to prove the old theory that genius is a neurosis. The next chapter deals with such wide questions as Socialism, Free Will, the Origin of Marriage, Charity, and Pauperism.

The section Bibliography gives a list of books and articles on the subjects treated, which fills 226 pages. Many of these are quite obsolete and useless, pamphlets and theses hundreds of years old, hopelessly buried under the heavy and thick paper alluvial deposits of each year. Dr MacDonald's principal aim seems to have been to write as long a list as he could make out. What advantage is it, for instance, for us to learn that Dr Heckenberg wrote a quarto volume, *De Insania Longa*, published at Göttingen in 1763; or that Dr Heinroth wrote an octavo upon *Lying* in 1834? Instead of giving the title of Hibbert's once well-known book on Apparitions, he cites at length the German translation, which was published at Weimar in 1825. It may be said that no one is expected to read Dr MacDonald's catalogue through, and his book presents us with a great deal of information which will save much trouble to any one who desires to read about the subjects treated.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH

SESSION LXXIII.—MEETING II.

Wednesday, 6*th December* 1893.—Dr Clouston, *President, in the Chair.*

I. Election of Members.

W. Ford Robertson, M.B., C.M., Royal Asylum, Morningside, and James Mowat, M.B., C.M., Priestfield Road, were elected Ordinary Members of the Society.

II. Exhibition of Patients.

1. *Dr Elkins* showed three women suffering from GENERAL PARALYSIS OF THE INSANE, to emphasize the difference between male and female general paralytics, and pointed out that the disease is rarer in women than in men in the proportion, according to Mickle, of 1 to 4 or 5; the average course is milder and longer; the remissions less frequent and less marked; the spinal symptoms, if present, less decided; and the so-called "congestive attacks" less frequent and less severe. The cases showed the usual motor symptoms of the disease, but from the mental aspect they varied much from the classical general paralytic. They were non-delusional, silly, childish, easily pleased, had considerable loss of memory, and were generally enfeebled in mind. There had been an increase in female general paralytics admitted to Morningside Asylum in recent years. Formerly one, two, and three cases were the more common numbers yearly admitted, but in 1891 there were eight cases, in 1892 six cases, and up to the present date during 1893 eleven cases had been admitted. Dr Elkins believed it would be fairer to say that the area of certifiable lunacy had increased rather than that general paralysis was more common now in women than formerly. Many of the cases would formerly have been treated outside an asylum, and most of the cases were far advanced in the disease when they were admitted from their homes or from the poorhouse.

2. *Dr A. T. Sloan* showed three patients after recovery from SMALLPOX. The first was a little girl of 3 years. The early age at

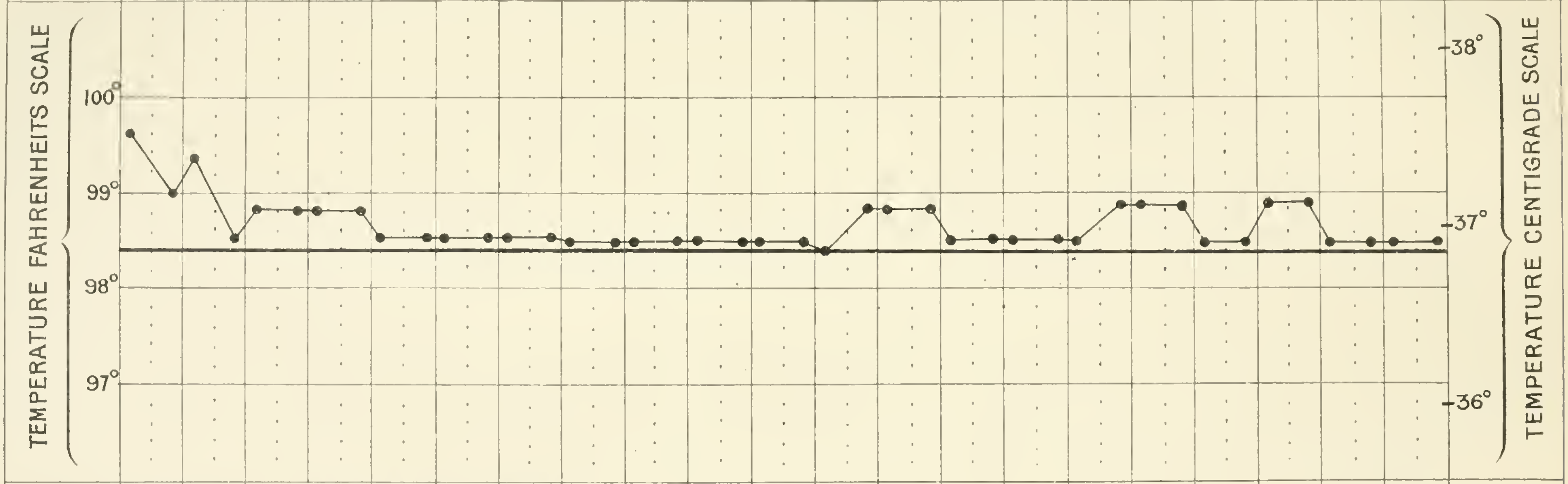
once suggested the possibility of chicken-pox, but the character, and especially the distribution of the rash, were conclusive. When seen the face and head were completely covered with a hard papular rash, in some places vesicular and sero-purulent, and on the forehead distinctly confluent. The rash, was pretty well distributed over the arms, especially on the flexor surfaces. There were no vaccination marks visible, though the child had been vaccinated. The patient showed very well the after-appearance of a mild attack of smallpox. A few pits were present, while both cheeks, especially the right, were covered with little pink spots, which shone and glistened on exposure to cold. Premature labour came on in the second patient when seven months pregnant. The temperature was elevated (102°·4 F.), and she showed the distinctive papular rash of smallpox on the face, head, arms, and abdomen. She gave birth to a female child, which exhibited no rash, and died in a few hours. The mother made an uninterrupted recovery in hospital, the temperature never after the fourth day being above normal, and on the fourteenth day only rising to 98°·8 F. Slight pitting was present after the attack. Two good vaccination marks were visible. The third patient's illness had commenced with a very severe attack of herpes zoster. The tongue was coated; he felt inclined to shiver, and looked very ill; and suffered intense pain, not only pain in the side being present, but also in the back and head. Under treatment he had become easier the next day, but a further eruption had made its appearance on the chest and abdomen, here and there petechiæ, with a general mottling of a measly character. The next day the typical shotty eruption of smallpox was present in the forehead, face, and scalp, with a few papules on the arms and trunk. He was removed to hospital, where the photographs were taken on the second day of the smallpox and fourth of the herpetic eruption. On the abdomen and chest are seen the preliminary rashes of a measly character, while the true papules of smallpox are indicated on the cheeks, especially the right; and over the left malar bone, where they are confluent, and on the right arm and back. The herpes forms a complete half-girdle round the chest, reaching from sternum to spine. Such a complication of smallpox had never, as far as could be discovered, been described before. The herpes did not seem to be a mere accident, as the patient had been infected with smallpox at least twelve days before, and the simultaneous appearance of the herpes with the preliminary rashes seemed to show a complication never previously observed.

3. *Mr Caird* showed a patient on whom GASTROSTOMY had been performed, illustrating the method of Witzel.

4. *Dr Byrom Bramwell* showed a case of ACROMEGALY in a giantess. The patient, aged 28, measured 6 ft. 2½ in. in height, and weighed 24½ stones. Up to the age of 16 she was in no way

Name *J—— L——* Age *23* Disease *Puerperium and Small Pox* Result *Recovered*

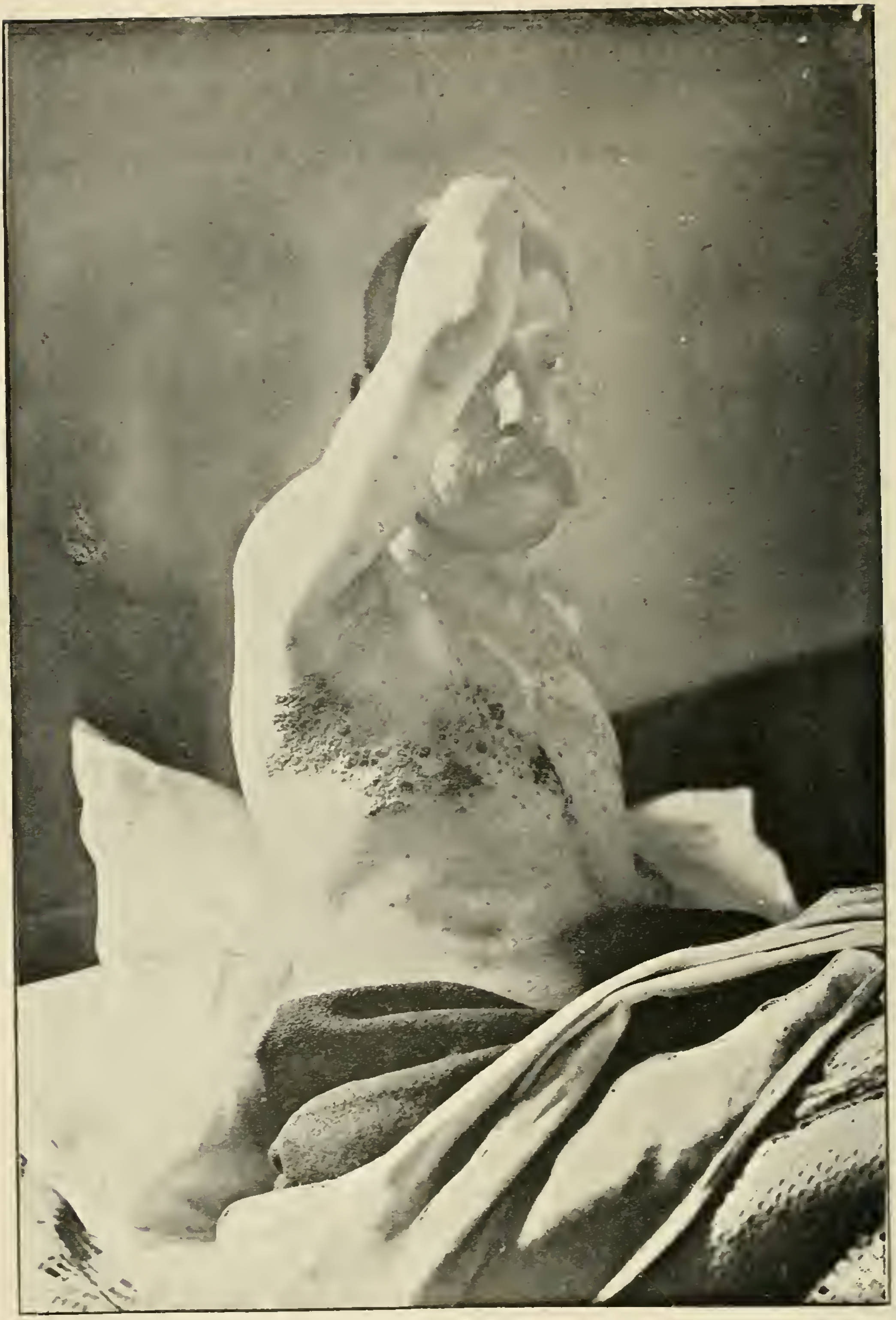
1893											March										
Feby	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10



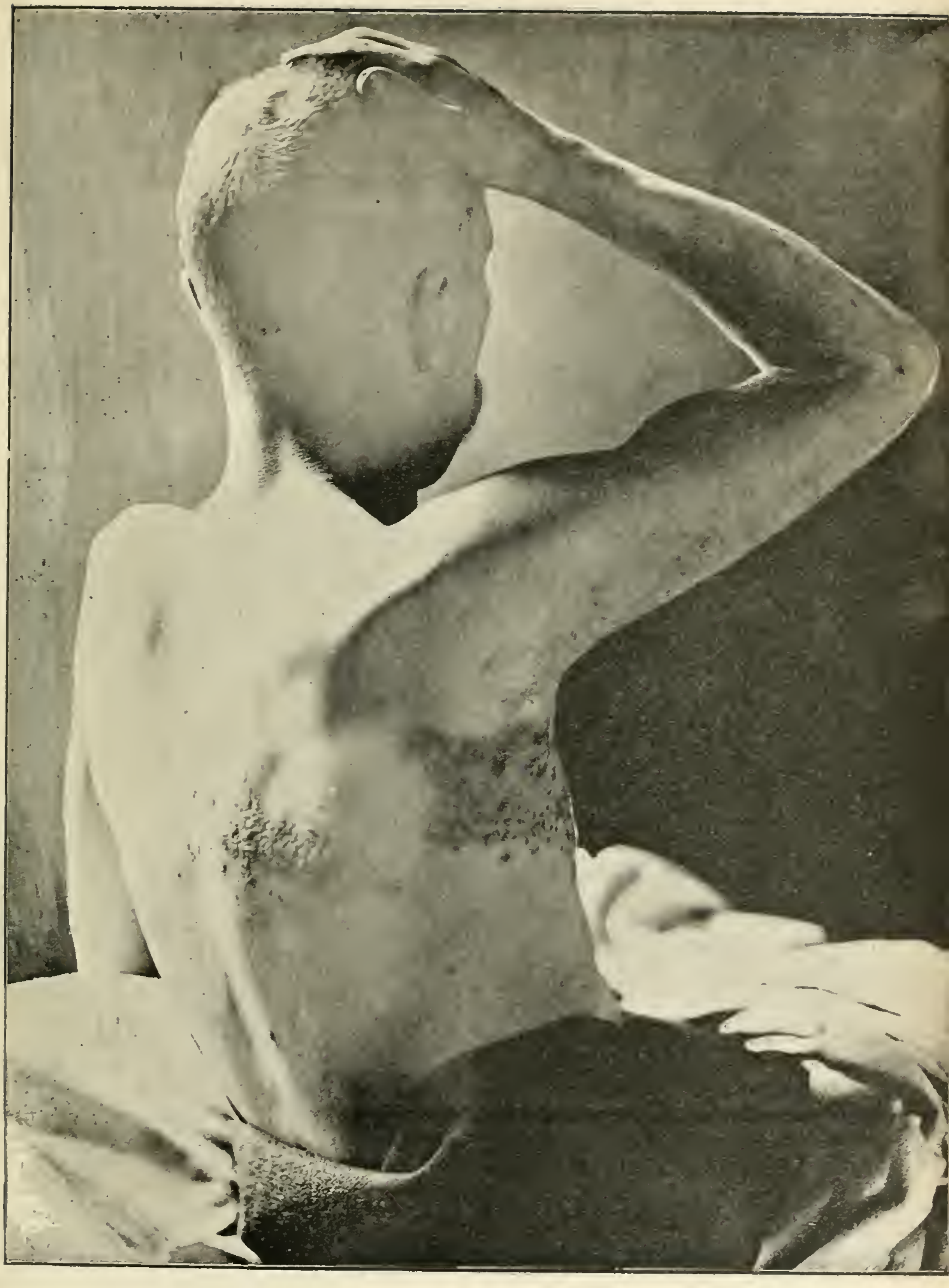
Has 2 good Vaccination Marks

Dismissed 27th March 1893

Motions	1	0	0	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	Motions
Day of Disease	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	2	Day of Disease



Dr A. T. Sloan's Case of Herpes Zoster combined with Smallpox.



Dr A. T. Sloan's Case of Herpes Zoster combined with Smallpox.

peculiar for her size. She then began to grow rapidly, and by the age of 20 had attained her present height. In many of its features the case resembled acromegaly, but some of the typical characteristics of that disease were wanting. The overgrowth, though certainly more marked in the hands and feet than elsewhere, was more general than the overgrowth of typical acromegaly; the shape of the fingers and lower jaw was not characteristic; menstruation was not arrested; the mammæ were not atrophied; the appetite was small; the urine was scanty; and the pulse was of normal frequency. The patient complained of debility, lassitude, excessive sweating, thirst, headache, and neuralgic pains. There was an excessive growth of hair on various parts of the body; numerous small-stalked warts had developed on the surface of the skin since the illness commenced; the spinal column was curved in the upper dorsal and cervical regions; the soles and palms were thickly padded with fat; the temperature was subnormal; and at the time of the patient's admission to hospital the temporal portion of the field of vision was markedly constricted in the right eye. Notwithstanding the absence of some of the characteristic features of acromegaly, notably the arrest of menstruation, atrophy of the mammæ, and the characteristic shape of the hands, fingers, and lower jaw, Dr Bramwell was disposed to think that the case resembled acromegaly rather than any other known disease. (He referred to a case which had recently been examined post-mortem in America, in which acromegaly occurred in a giantess.) The patient had been treated first with extract of thyroid, which seemed to aggravate the symptoms, and then with extract of the pituitary gland, which seemed to do good. The patient had distinctly improved during her stay in hospital; the headache from which she had suffered every day for six years had entirely disappeared, the sweating was very much less marked, she felt very much stronger, and the constriction of the field of vision had disappeared. Possibly the improvement was due to the pituitary extract, but Dr Bramwell did not wish to lay too much stress upon this point. It was difficult to draw conclusions from a single case; and in a previous and more typical case of acromegaly which he had treated last year the pituitary extract seemed to do harm, whereas the thyroid extract seemed to do good. Possibly the improvement was the result of the altered conditions in which the patient was placed during her stay in hospital. But, be this as it may, the pituitary treatment of acromegaly deserved a thorough trial; for one of the most constant pathological features of the disease was the enlargement of the pituitary gland, and it had been theorized that the symptoms of acromegaly were due to disease of the pituitary gland, just as the symptoms of myxœdema were due to disease of the thyroid gland.[1]

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[1] This question is considered in detail in Dr Byrom Bramwell's *Atlas of Clinical Medicine*, vol. ii., part 3.

III. Exhibition of Specimens.

1. *Dr Robert Mackenzie* showed a THUMB which had been amputated at the metacarpo-phalangeal joint for a compound comminuted fracture.

2. *Dr Alexander Bruce* showed naked-eye and microscopic specimens of the ANCHYLOSTOMA DUODENALE, some of which were obtained in Aix-la-Chapelle, and others, through the kindness of Dr Tyrie, from Cairo. Attention was drawn to the fact that the parasite was now recognised as the cause of a severe form of progressive anæmia, not only in Egypt and in the notable epidemic which occurred among the workmen in the St Gothard Tunnel, but also among the miners and bricklayers in Rhenish Prussia, where the disease was contracted by drinking water containing the ova. In Germany the disease was recognised by the detection of the ova in the fæces, and has proved very amenable to treatment by the freshly prepared extract of the male shield fern. The possibility was suggested that the same agent might be the cause of some of the forms of pernicious anæmia in this country, and it was recommended that in all cases of pernicious anæmia search should be made for the ova.

3. *Dr James Ritchie* showed—(*a.*) A specimen of LARGE POLYCYSTIC KIDNEY from a man, J. P., æt. 53. Only the right kidney could be obtained; it was considerably smaller than the left one, and measured 8 inches long, 5 inches broad. It was rather lobulated than nodulated, surrounded by much dense white fibrous tissue; large and small cysts projected from its surface. On section the capsule was very much thickened; the most striking feature of the kidney was the heterogeneity of its structure. One portion, about 3 inches long by about 1½ inch broad, presented the appearance of kidney structure, but it was pale, firm, with only a cyst here and there, and with iodine there was seen the change in the glomeruli characteristic of waxy disease. A much larger portion seemed to be transformed into cysts of different sizes, most of them with solid or semi-solid contents; the lower portion of the kidney had some resemblance to a sponge, and gave the impression of numerous small collapsed cysts. The kidney differed from the usual appearance of large polycystic kidney in so far that it was much more firm, and that the cyst contents were mainly solid or semi-solid; comparatively few of the cysts had fluid contents. The patient had for a number of years suffered from symptoms which, when they are associated with renal tumour and polyuria, Dr Ritchie believes to be characteristic of polycystic kidney: these are occasional attacks of paroxysmal pain in the lower dorsal region, sometimes accompanied by hæmaturia. Three years ago, when the patient was first seen by Dr Ritchie, there was a very large tumour on each side, so large that the venous circulation in

the vena cava was seriously interfered with. There was an extensive varicosity of both lower limbs and of scrotum, and there was a considerable compensatory dilatation of the superficial veins of the abdominal parietes. On each side the colon could be both seen and felt as it crossed in front of the renal tumour. The difficulty of diagnosis was increased somewhat by the presence of pus in the urine, sometimes in considerable quantity. This had continued for years. The long continuance of purulent discharge, the presence of a rather large amount of albumen in the urine, latterly 12 per cent., and the existence of a degree of œdema of ankles notwithstanding very great polyuria, led to the suspicion of waxy disease in addition to cystic disease of the kidney. The results of post-mortem examination showed that waxy disease existed. Two points of special importance were referred to. The first fact was one which Dr Ritchie had not noticed in the recorded histories of eighty-nine cases which he had collected. During the last year of the patient's life there was a marked diminution in the size of the tumours, and a corresponding subsidence of pressure symptoms. On one occasion the patient passed in the urine a very large quantity of a material which he described as being like thin porridge; this continued for upwards of twenty-four hours. Possibly it was due to the rupture of a cyst into the pelvis of the kidney or some other part of the tract. Then the condition of the lower end of the right kidney, apparently a mass of empty collapsed cysts, raised the question, Is it possible that the contents of these cysts may have been absorbed? The other point of special interest was that, while the patient was suffering from very marked symptoms of what is called uræmia, among those headache, sickness, and marked dyspnœa, the air entering every part of the chest freely, he was passing 73 oz. of urine in twenty-four hours, sp. gr. 1016, and this contained 293 grains of urea. The diet at this time was very limited in quantity, and chiefly milk and bread. The amount of urea excreted was greater than is often found, even when there is no symptom of what is called uræmia. Consciousness was retained up to within a few hours of death; there was no tendency to general convulsions.

(*b.*) A RUPTURED HEART from a lady, aged 77. She had somewhat advanced cirrhosis of kidney, with retinal hæmorrhages and other eye changes. She had also had two slight apoplectic seizures. While lying quietly in bed, about two o'clock A.M., this old lady had been seized with severe præcordial pain; this was partially relieved by a sinapism; several hours' sleep followed, and a moderate breakfast was taken. When seen early in the morning she was still suffering; had on another sinapism; pulse 100, rather feeble; heart sounds also feeble, but no abnormal sound; the surface of the body was cold and clammy. She was able to take a light dinner, but in the afternoon there was an exacerbation of pain, and she died suddenly fourteen hours after the first symptom. On post-mortem examination the pericardium was found to be distended with fluid blood. The rupture was a partial one, not extending into the ventricle. The position was that in which rupture most frequently occurs, viz., on the anterior wall of the left ventricle near the septum, not very far from the apex. The degeneration of the heart wall was not uniform, but in some places very advanced. The ruptured portion did not to the naked eye seem to be in an advanced condition of degeneration. In 71 per cent. of cases death is rapid; if the patient is seen during life, the pulse is weak, irregular, soon imperceptible, and collapse is very marked. In this case it occurred slowly. When the patient was first seen, viz., about eight hours after the earliest symptom, although the pulse was rather feeble, it was regular, and not very rapid. In all prolonged cases probably the rupture, as in this case, is only partial. It usually occurs during exertion; in the case referred to the patient was lying quietly in bed when the first symptom occurred.

4. *Dr William Russell* showed—(*a.*) A GALL-STONE UNDERGOING DISINTEGRATION. The specimen was taken from the body of an old woman. The gall-bladder was firmly contracted on the mass of calculus, but on incising it it was seen to contain a small quantity of a slightly greenish-yellow creamy fluid, while the solid contents consisted of a large irregular calculus with irregular fractured edges and surfaces, and a mass of smaller fragments with sharp edges and points, evidently derived from disintegration of the larger mass. The wall of the gall-bladder was thickened, and its inner surface was catarrhal. Dr Noël Paton had kindly examined the calculus, and found it to consist mainly of cholestrin.

(*b.*) A specimen of advanced FATTY INFILTRATION OF THE HEART in which there was a great deposit of fat on the surface of both ventricles, which had encroached considerably upon the thickness of the muscle of both, and had also very extensively invaded the remaining muscular substance—the right ventricle more especially—and to such a degree as to be in greater bulk than the muscular substance. The patient had led a very lethargic life, and had slight œdema, but there was no albumen in his urine. There was, of course, evidence of very weak heart. The patient died in the first stage of a croupous pneumonia.

5. *Mr Cotterill* showed the parts removed from a case of CARCINOMA OF THE THROAT, in which he had performed tracheotomy and gastrostomy with great relief to the patient during the last five months of life. The disease was situated opposite the cricoid cartilage, and had been in existence about one year before the patient was admitted to the Infirmary. There had been early communication brought about by the growth between the trachea and œsophagus, but though this was followed by several abscess formations in the cellular tissue in the neck, it was not marked by any symptoms referrible to passage of food into the air passages. The larynx becoming involved, tracheotomy was found necessary

in August, and this entirely relieved her of all discomfort in this direction. The operation was made difficult by the fact that the growth had pushed the trachea very much to the side, and overlapped it to such an extent that the incision had to be made through tumour growth to reach the trachea. A few weeks later, as swallowing had become very difficult, and the patient was losing flesh at the rate of 1½ lb. a week, Mr Cotterill performed gastrostomy. The usual oblique incision having been made, the fibres of the rectus were separated, and the stomach stitched to the abdominal wall by six stitches set back about an inch from the edge of the opening in the abdominal wall. This plan gives a wide and excellent attachment of the stomach to the parietes, and the patient was able to take a large quantity of food by the wound without the least trouble from regurgitation. The patient survived the operation for five months, and remained in comparative comfort. The tumour was a squamous epithelioma.

6. *Dr Carmichael* showed the TEMPORAL BONE from a case of septic thrombosis.

IV. ORIGINAL COMMUNICATIONS.

1. *Dr Graham Brown* communicated a NOTE ON CERTAIN CHANGES IN THE CIRCULATION PRODUCED BY PYREXIA.

Dr Byrom Bramwell said that he had listened with great pleasure to Dr Graham Brown's interesting communication. The apparatus which Dr Graham Brown had shown them was very ingenious. He did not venture to express any opinion as to the bearing of Dr Graham Brown's results. The paper consisted of a series of observations and facts. What bearing those facts might have on the pathology of fever he did not venture to surmise. The view that the elevation of temperature in fever was beneficial was not, of course, a new one; Nothnagel, in particular, had insisted upon it. Possibly the increased facility with which heated (febrile) blood passed through the bloodvessels was, as Dr Graham Brown supposed, a beneficial factor, and tended to relieve the heart of some of the strain which a continued febrile condition threw upon it.

Dr Gillespie asked if, seeing that the numbers indicating the change of viscosity in solutions of the different proteids were so similar, Dr Brown would say what the strength of the solutions were, or if they were the same? And also, seeing that the figures were so similar, whether concentration of a solution exercised much effect? The increased ease in the flow of the blood in pyrexia must have a marked effect on the process of phagocytosis.

Dr Graham Brown, in reply, thanked the Society for the attention given to his paper.

2. *Mr A. G. Miller* read a NOTE ON BIER'S NEW METHOD OF TREATING STRUMOUS DISEASES OF THE EXTREMITIES BY PASSIVE CONGESTION. He showed a girl who had been under treatment for lupus of both feet, one of which had been treated by Bier's method,

and was practically cured, while the other, which had been treated by scraping, showed little improvement.

Mr Caird said that any one who referred to Bier's initial paper[1] would be struck by the originality of his method, the ingenuity exercised in its application, and the train of thought which led to its introduction. He had himself seen excellent results gained by it under the care of Bier in Kiel in summer 1892, but his own personal experience was as yet too limited to enable him to express an opinion. He proceeded to quote from a letter written in September, wherein Dr Bier stated that he had already the experience of over 150 cases; that it was possible with absolute certainty to cure by the method a not yet softened and skin-whole tuberculosis, but that treatment must extend over a year or more; that, when large foci were present in bone, cold abscesses rapidly ensued; and that these should be punctured and injected with iodoform and glycerine. Furthermore, Dr Bier advised a trial to be made, in the first instance, with cases of tubercle in which the skin was intact, since when the skin was broken much time and experience in using his method was necessary.

Dr Brakenridge said that his own experience went to confirm Rokitansky's view that it was extremely rarely that one met with pulmonary tuberculosis in cases in which there was heart disease and congestion of the lungs. He had only seen two such cases. In one there was reason to believe that there was lung disease before the heart disease, and in the other there was no loss of compensation, and therefore no lung congestion. Mr Miller had, some years ago, mentioned to him a case in which, after amputation at the hip-joint, a pre-existing tubercular disease in the lungs had rapidly improved, owing, probably, to increased blood pressure in the lungs. He thought that this paper was exceedingly interesting from the medical point of view: for, at a time when efforts were especially directed to destroying tubercular disease outside the human body, so as to prevent the risk of invasion from without, it was well to recognise and accentuate the fact that there were vital and physical forces within the body by which invasion might be prevented or actual attack repelled.

Dr P. A. Young said it had also been stated that deformity of the chest tended to prevent tubercular disease of the lungs. It was probably these observations that had suggested the use of carbonic acid gas as a therapeutic agent; and he wished to remind the Society that there was waiting in the hands of the Royal College of Physicians a prize of a hundred pounds for the best paper on the use of carbonic acid gas in medicine.

Dr Norman Walker said he could testify to the great improvement which had taken place in the foot of the girl Mr Miller had shown to the Society. The nodules, which in his experience were almost invariably left behind by other methods of treatment, were no longer present. He agreed with Mr Caird's remarks regarding cases seen in visiting foreign hospitals. They had cases shown to them there, and were told that they had greatly improved, but when they came home and tried the same treatment they did not get the same benefit from it. He thought that there were many cases of tuberculosis of the skin that were best treated by congestion, however it might be produced. When the skin was thickened, and there was a great deal of fibrous tissue in the corium, then congestion was most useful. He believed that blisters, and various ointments used, really acted by simply causing congestion. The treatment was not applicable to the ulcerative form of lupus. He thought that the method of Bier was well worth adding to our other forms of treatment in many cases.

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[1] *Behandlung Chirurgischer Tuberculose mit Staunngshyperæmie*, Lipsius and Tischler, 1893.

Dr James Ritchie said that this plan of treatment raised the question how far are these changes in tubercular tissue due to physical, and how far to vital alterations? Some of the speakers had not discriminated between active and passive congestion. In Bier's method there must be a marked increase of pressure in the capillaries of the included area. It was well known that during pregnancy tubercle often remained in abeyance, and during pregnancy there is an increase of blood pressure.

Mr Cotterill said he had tried the method in several cases, but he had not been able to convince himself that any good had come of it. He had always tried it in cases in which he could contrast two sides. In order to get anywhere near the solution of the value of this method, they must get an equal proportion of tubercular cases under similar hospital treatment and compare them with those to whom Bier's treatment was applied. He thought that a very great deal of the improvement put down to this method had been due to the very improved conditions in which the patients found themselves in hospital. It seemed to him to be a little peculiar that this method should do good, when one remembered that the place in which tubercular disease of bone was most of all apt to appear was the epiphysis, which was the part best supplied with blood. It was strange if at a later stage a little more blood should stop the process.

The President thanked Mr Miller for his valuable paper.

Mr A. G. Miller replied briefly, thanking the Society for their kind reception of his paper.

3. *Mr Caird* described WITZEL'S METHOD OF PERFORMING GASTROSTOMY.

Owing to the late hour, there was no discussion upon his paper.

ROYAL MEDICAL SOCIETY.

Nov. 17.—Dr Elder in the Chair.

Dr Bremner delivered his Presidential Address. His subject was The Life and Character of Syme. He briefly described

Syme's connexion with the Edinburgh School of Medicine, Minto House, and the University. He mentioned that, while still an undergraduate, Syme was appointed by Liston demonstrator in anatomy; that in 1825 he began to lecture on surgery as an extra-mural teacher; and that in 1833 he was appointed to the Chair of Surgery in Edinburgh University. This post, with an interval of five months spent in King's College, London, he filled with the greatest distinction until his death in 1870. As a surgeon Syme was as near perfection as possible, never faltering nor hesitating, and always inspiring others with confidence. At the age of thirty-five he was the consultant surgeon for the whole of Scotland. Much of the surgery of Edinburgh to-day owes its origin to Syme.

Dr Elder gave a communication on a case of Chloride of Zinc Poisoning. The patient had swallowed about ℥iij. of soldering fluid, *i.e.*, hydrochloric acid in which plumbers dip solder, in mistake for tartaric acid, in lemonade. When brought to the Infirmary she had intense pain and extreme thirst, and, in spite of treatment, died in awful agony in about eight hours. The œsophagus and stomach from the case were shown. These presented extreme contraction of the muscular walls, with loosening and detachment of the mucous membrane, and numerous submucous hæmorrhages. There was no perforation.

Dr Murray Leslie said that if the patient had survived she would have developed stenosis of the œsophagus.

Dr Giles thought the cause of death probably was hydrochloric acid, and not chloride of zinc.

Drs Hamilton and Yeoman also spoke.

Dr Orr read notes of a case of Nephrectomy for Hydronephrosis. The excised organ and microscopical specimens from it were shown. After describing the clinical features of the case he discussed various lines of treatment for hydronephrosis, entering fully into the operation of nephrectomy. He described the methods of operation by posterior or anterior incision, giving reasons for his preference for the former. In conclusion, he mentioned the causes of hydronephrosis.

Dr Bell moved a vote of thanks, and referred to a case with a similar affection under his care.

Drs Selby and M. Leslie, and Messrs A. R. Wilson, G. C. Laing, and Bowes also entered into the discussion.

Dr Macdonald showed—(*a.*) A large Multilocular Ovarian Cyst which had been removed, along with a small cyst of the other ovary, from a patient æt. 53; (*b.*) a large Unilocular Ovarian (?) Cyst removed from a patient æt. 26. This patient had ovariotomy performed upon her seven years ago, and a large ovarian tumour removed. At this time the other ovary could not be removed. (*c.*) An Abortion at about the fifth month in which the placenta was fibrous and had been extremely adherent to the walls of the uterus. The patient was 39 years of age, and had not menstruated for three and a half years. He also gave a short communication upon the specimens.

In the discussion which followed, Messrs Martine and Stewart, Drs Orr and Giles, Mr Laing, and Dr Bell took part.

Nov. 24.—Dr Hutchison in the Chair.

Dr Elder gave his Presidential Address. He emphasized the importance of a wide general knowledge of the world to medical men. This was now attained with difficulty, owing to the narrowing and self-absorbing tendency of medical study. We should be students all our lives and approach each case with open and unbiassed mind, diagnosing by rational investigation, and not by such methods as mere facial expression, etc. In conclusion, he dealt with the value of post-mortem examinations, and of the discussion and criticism of different cases and treatment.

Dr Selby read a paper on a case of Typhoid Fever during Pregnancy and Parturition. The patient came under his notice at the Rotunda Hospital in Dublin. She had been in the Fever Hospital suffering from typhoid fever, and was dismissed cured. Shortly afterwards, however, she seemed to have a relapse, and labour came on. During labour her temperature rose to 105° F. and the patient showed symptoms of perforation. The immunity from several fevers which pregnant women are said to enjoy was alluded to, as well as the fact that in cases such as the present the child usually dies of enteric fever shortly after birth.

Drs Fowler, Murray Leslie, and Mackay discussed various points in the case.

Dr Murray Leslie read a communication on Pulmonary Apoplexy, referring briefly to the clinical history of two cases, and exhibiting illustrative pathological specimens. He discussed the naked-eye and microscopical characters of the condition, and considered the theories advanced to explain its causation. Embolism of a branch of the pulmonary artery, the embolus being derived from an ante-mortem clot in the right auricular appendix, seemed to him the most probable cause. Venous congestion of the lungs, resulting from mitral stenosis, which is frequently present, tended greatly to produce the actual hæmorrhages. Dr Leslie admitted the possibility of primary thrombosis of the pulmonary artery, apart from embolism, resulting from stasis of the blood in exceptional cases. The diagnosis was considered, and in reference to treatment the use of oxygen inhalations was suggested in addition to rest and quiet.

Dr Elder moved a vote of thanks, and alluded to embolism in a bronchial artery as a cause.

Dr Hutchison remarked on the diversity of opinions held by different pathologists and clinicians in regard to pulmonary embolism.

Messrs J. P. Stewart and Greig and Dr Bell also spoke.

Dec. 1.—Dr Pringle in the Chair.

Dr Welsh showed two patients, brothers, aged 22 and 18 years respectively, at present under treatment for Friedrich's Disease in Ward 26, Royal Infirmary. The duration of the complaint was four years in each. Their family history was good, and neither had suffered from specific disease or any other illness or accident; nor was either addicted to alcohol. They presented typically the symptoms of Friedrich's disease, which Dr Welsh fully described, viz., ataxic gait; some impairment of tactile sensibility and of muscular sense in the lower limbs; abolition of the knee-jerks; nystagmus; slight difficulty in articulation; stature and intelligence below par. Dr Welsh contrasted Friedrich's disease, locomotor ataxia, and ataxic paraplegia, particularly dwelling upon the symptoms and pathological appearances. In conclusion, he mentioned that one of the two patients was being treated with potassium iodide and the other with potassium bichromate. Both were also being massaged. There had been little or no improvement.

Dr Elder alluded to the difficulty of diagnosing this condition.

Mr J. P. Stewart thought Dr Welsh had omitted the clawlike grip of the hands considered by some authors almost diagnostic of Friedrich's disease.

Mr Garbutt spoke about the treatment adopted.

Drs Hamilton and Talbot described similar cases.

Mr Bowes suggested that the unsteady gait of one of the patients might result from defective hearing.

Dr Macdonald thought most of the symptoms could be explained by adherent prepuce.

Mr Briggs asked about the treatment, and hoped that a drug might yet be found for the cure of spinal sclerosis.

Mr Bowes read a communication upon a case of Hepatic Enlargement from Waxy Disease of twelve years' duration. The patient was saturated to the core with tubercular disease. Many of the large joints were ankylosed, and the liver, kidneys, intestines, and probably the spleen, showed signs of waxy degeneration.

Mr Garbutt moved a vote of thanks.

Mr Briggs remarked upon the hopelessness of treatment for waxy degeneration.

Drs Orr and Giles mentioned cases with somewhat similar conditions.

Mr Greig also spoke.

Dr Rainy read his Dissertation on Peripheral Neuritis. After an outline of the history, and a description of the clinical course and morbid anatomy of the disease, some of its commoner causes were considered, and the special types of neuritis following them described and illustrated by notes of cases. In this manner, under the heads of toxic causes, dyscrasic causes, and causes due to perverted metabolism, almost all the varieties were arranged. Special prominence was given to alcoholic, diphtheritic, and malarial neuritis, and to that following lead poisoning. The pathology of the condition was then considered, and the various views as to the primary lesion criticised. A brief *résumé* of treatment concluded the dissertation.

Dr Orr moved a vote of thanks to Dr Rainy.

Dr M. Leslie differed in some minor points from the pathology given in the paper.

Dr Elder described the pathology, and referred to two cases he had seen of somewhat similar conditions, viz., leprosy and beri-beri.

Mr Garbutt and Dr C. C. Easterbrook referred to cases each had seen in Edinburgh.

Mr J. P. Stewart inclined to regard the lesion in the condition as central and not peripheral.

Dr Giles spoke of its frequency amongst men employed in breweries.

The dissertation was accepted by the Society.

Dec. 8.—Dr Bremner in the Chair.

Dr Orr read notes of a case of Intra-cranial Tumour, of great clinical interest. He also showed the brain and tumour from the case. The diagnosis was very difficult, owing to slight and anomalous symptomatology. The patient, æt. 49, had complained of pains in the head for eight or nine months, at times paroxysmal in the frontal and over the right motor areas; she had occasional vomiting; convulsions limited to the left arm and hand; there was marked giddiness, and on her admission to Chalmers's Hospital, she was distinctly paraplegic and could not walk. There was tenderness on percussing her head over the right motor areas. Hearing on the left side was markedly impaired. Field of vision was limited on each side, and double optic neuritis was present. The symptoms pointed to a lesion in the right cortical motor areas. In hospital she developed on November 20 atony of left side of face, drowsiness, retraction of head, and rigidity of the cervical muscles, with irritability. Two days afterwards she was trephined over right motor areas, but no abnormality was found. There was no change in her symptoms after the operation, and she died two days afterwards. On post-mortem examination the trephine wound was quite satisfactory, but a tumour the size of a walnut was found apparently springing from the pia mater over the internal auditory meatus. It lay on the petrous temporal bone, over the internal auditory meatus, close to the portio dura and portio mollis, and between the cerebellum and temporo-sphenoidal lobe of the left side, pressing on the junction of the pons and medulla. The left sixth nerve was incorporated with it on its inner side, but the other cranial nerves were not affected. The tumour was pediculated, firm, rounded, slightly lobulated, and quite distinct from the brain.

Dr Mackay, in proposing a vote of thanks, mentioned a somewhat similar case, in which a lunatic experienced a feeling of double personality; and another case of a lunatic, where a large tumour over the motor areas presented no symptoms.

Dr Hamilton mentioned that the patient was treated previously in the Royal Infirmary.

Dr Rainy saw the patient during life. He thought the tumour was probably a sarcoma.

Mr Bowes asked if the patient's sense of taste was altered, as from the situation of the tumour the fibres of taste might be affected.

Drs Elder and Talbot, and Messrs A. R. Wilson and Martine, also spoke.

Dr Hamilton read notes of two cases of Pernicious Anæmia. He described the treatment and the post-mortem appearances of one of them. He referred shortly to the pathology of the disease, but discussed the treatment in more detail, referring particularly to the transfusion of blood. Specimens of liver and bone-marrow from such cases were shown, and Mr Wilson showed microscopical specimens of the liver.

Mr Paget moved a vote of thanks.

Dr Leslie spoke of the condition of the blood in pernicious anæmia.

Dr A. B. Easterbrook referred to a case in which diarrhœa was a leading symptom.

Dr Stanwell mentioned a patient in whom transfusion was performed in Dr Affleck's ward two years ago, who is now perfectly well and strong.

Drs Mackay and Welsh, Mr J. P. Stewart, and Drs Cattanach and Yeoman, also referred to points in the diagnosis and pathology of the complaint.

Dr Fowler showed portions of the temporal bone removed from a child æt. three months, who had died after trephining for extensive mastoid disease.

Dr Welsh, Mr Jones, and Dr Macdonald spoke.

Dr Hutchison read his Dissertation on the Nature of the Deep Reflexes. He took the knee-jerk as an example, and considered the three theories as to its cause which have been advanced, viz., (1), that it is a true reflex; (2), that it is a direct muscular contraction; (3), that it is partly both, *i.e.*, direct muscular contraction, but dependent on the existence of a reflex.

He disposed of the first hypothesis by the "time argument," and of the second by the fact that division of a part of the reflex path negatives it. The anatomy of the reflex was described, and its function discussed. This he concluded to be "the maintenance of tone" in the muscles. Division of any part of the reflex arc abolishes a deep reflex, and this, along with other facts, pointed to the conclusion that the reflexes are dependent on the existence of a certain degree of something in the muscles known as "tone," tone being a reflex automatic function of the spinal cord. Hence all the evidence is in favour of the third hypothesis.

The restraining influence of the cerebrum upon the spinal centres' subserving tone, and through them to the muscles, was described, and Hughlings Jackson's idea that the cerebellum exerts a counter-enforcing influence discussed. The clinical phenomenon known as reinforcement of the knee-jerk was considered, and Sherrington's view that the deep reflexes of one group of muscles were controlled by impulses from the opposing group explained. The deep reflexes are probably direct muscular contractions due to sudden tensile stimuli, but in order that these may act, a certain degree of tone must be present, which is produced reflexly by impulses starting in the muscles themselves, and controlled from above by the cerebrum, probably antagonized by the cerebellum, and also controlled from below by impulses starting in the opposing group of muscles. The paper concluded with a reference to the bearing of these views on clinical work.

Dr Murray Leslie, in moving a vote of thanks, congratulated Dr Hutchison on the lucidity with which he had explained his subject.

Drs Elder and Welsh, and Messrs A. P. Easterbrook, Montserrat, J. P. Stewart, and Bowes, spoke upon different points in which they agreed or disagreed with Dr Hutchison's views.

The dissertation was accepted by the Society.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

At the meeting of this Society on 25th October, *Dr Kirk*, Partick, showed two cases of Myxœdema,—one a male about 40 years of age, and the other a married woman, aged 42, and the mother of eight children. In the former the myxœdema seemed to have gradually supervened after a pleurisy, and in the latter after excessive hæmorrhage. The case of the latter was remarkable for the severe spasmodic affections from which the patient had suffered.

At the next meeting of the Society, on November 22nd, *Dr Kirk* read a paper on a Case of Recurrent Acute Œdema of the Lips, Tongue, and Soft Palate, alternating with Acute Eczema of the Face and Hands, in a case of Myxœdema. The patient was an unmarried woman, 34 years of age, and the chief interest of the case lay in the diagnosis of myxœdema, previous to the acute attack, affecting the skin and mucous membranes of the mouth. This was founded on a history of great disinclination for exertion for the past five or six years, and a dry, scaly state of the skin of the face and hands, with an increase in size of the feet, hands, and parts about the neck, the mother having observed lately a tendency to a hanging chin. An important fact was that a brother of the patient, lately dead, had been a crétin; and Dr Kirk expressed the opinion that the present case was one of modified cretinism, the tip of the nose being depressed, and the patient having never been able to bear cold bathing, which, her mother found, made her "blue," so that the circulation was difficult to restore afterwards. He intended to make a further study of the acute symptoms, and a comparison with other cases of skin disease. Drs Cameron, Cullen, Stark, Marshall, and Richmond took part in the discussion which followed, and Dr Kirk replied.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

A New Treatment for Pulmonary Tuberculosis.—G. M. Carasso publishes (*Gazz. d. Osp.*, November 2nd) a short note on a new method of treating of phthisis. Starting from the fact that L. Braddon had obtained good results from the inhalation of peppermint oils (*Lancet*, March 1888), Carasso began a series of experiments with that oil, and finally arrived at the following method of treatment:—Continuous inhalations of peppermint oil are combined with the internal use of an alcoholic solution of creasote with glycerine and chloroform, to which is added peppermint oil in the quantity of 1 per cent. He has treated already 39 cases of tuberculosis, among them several with cavities, and with abundant bacilli in the sputa, and he claims to have obtained excellent results, amounting in some cases to cure. The bacilli disappeared in from thirteen to sixty days. Cough, expectoration, and sweating ceased, the nutrition and weight increased, and the physical signs were such as to warrant the belief that *restitutio ad interum* had taken place in the lungs.—*British Medical Journal*, December 9, 1893.

TUBERCULIN TREATMENT IN EGYPT.—Schiess Bey and Kartulis (*Zeit. f. Hygiene*, vol. xv., part 2) give results of treatment with tuberculin in forty-eight tuberculous patients. They find that in the Egyptian climate the treatment is harmless if commenced with small doses, and that even patients with advanced phthisis may be treated by this method. They have compared their cases with others in which, though tuberculin was not used, the other conditions were the same. Their conclusions are in favour of the use of tuberculin; by its aid, they say, commencing pulmonary tuberculosis gets well certainly and in a few months, whilst advanced cases may also recover, though more slowly. Very severe cases with vomicæ, hectic fever, and night sweats, they admit, are unsuitable for this treatment. Scrofuloderma got well more quickly than lupus, and tuberculin was also found useful in certain tuberculous affections of the joints and bones in combination with surgical treatment. The Egyptian climate is, they think, especially suitable for the tuberculin treatment.—*British Medical Journal*, December 16, 1893.

CLINICAL EXPERIENCES WITH THE CATHARTIC ACID OF SENNA.—Dr Kral Dehio, of Dorpat (*St Petersburg Med. Wochenschrift*, No. 27, 1893) refers to the fact that the active principles of rhubarb, frangula, and senna possess very close chemical relationship, or are perhaps identical. He has experimented clinically with the cathartic acid obtained from senna by Gentz, which he believes to be more constant in its composition and more likely to be pure than that previously obtained by Kelby. Dehio administered it to twenty-one persons, giving adults 2½ grains and children ⅚ grain. This dose was somewhat too large. It did not fail in any case; the bowels were moved in the majority of cases in from eight to twelve hours, exceptionally earlier or later. In some cases it caused pain, but it was less likely to do this when it acted slowly. It appeared to act best in obstinate constipation.—*The Therapeutic Gazette*, November 15, 1893.

THE ACTION OF SCOPOLAMINE ON THE EYE.—L. Bellarininow (*Vratch*, Nov. 17th, 1893, abstract in *Revue Générale d'Ophthalmologie*, July 1893) has made some observations on the action of the new mydriatic recently proposed by Raehlmann (scopolamine). He draws the following conclusions:—Scopolamine is indicated for the same cases as atropine, especially to determine anomalies of refraction and accommodation. Owing to its marked effect on accommodation it permits of speedy and accurate determination; in addition, it considerably shortens the period of paralysis of accommodation and of mydriasis. Scopolamine is also preferable to atropine in cases of short attacks of inflammation of the cornea. In general, scopolamine has all the good effects of atropine, without its bad qualities. The author therefore thinks that scopolamine will soon replace atropine in the practice of ophthalmology.—*Therapeutic Gazette*, Nov. 15th, 1893.

DUBOISIN.—Marandon de Montijel (*Arch. d. Neurol.*, September 1893) gives notes of thirty-five cases of insanity treated by him with duboisin, for periods ranging from several weeks to four months. The dose was from 1 to 2 millig. twice daily. He found that the sedative action of the drug was most marked in cases of general paralysis, chronic mania, and acute melancholia. In several instances, especially in general paralysis, tolerance soon became established, and the drug was then useless, even when the dose was increased. The gastric derangements, such as vomiting of food, and the great emaciation observed by the author as the effects of duboisin, convince him that it is not a suitable medicine for prolonged administration.—*British Medical Journal*, November 18th, 1893.

PEROXIDE OF HYDROGEN IN DIPHTHERIA.—Francis H. Williams has published the results of a further and more complete study of the mode of using peroxide of hydrogen in diphtheria (*Amer. Jl. Med. Soc.*, November 1893). Solutions used previously have not, he states, been strong enough. A solution containing over fifty volumes of available oxygen is required to kill the bacillus of diphtheria *in vitro* in ten seconds, which he contends is as long as the solution can be supposed to act when used clinically. If the solution was slightly acid (0·25 to 0·50 per cent.), strengths of twelve to twenty-five volumes were equally effectual. The requisite strength can be obtained by evaporating a weak solution over a water-bath ; for example, a ten-volume solution evaporated to one-sixth of its bulk is found to yield a fifty-volume solution. The special advantage claimed for hydrogen peroxide is that it breaks up and disintegrates the diphtherial membrane if brought into intimate contact with it, thus not only removing a source of infection and poisoning, but also permitting the access to the bacillus of any other germicide (in this case the hydrochloric or sulphuric acid in the solution) which it may be thought well to use. The peroxide does not attack the uninfected mucous membrane, and this selective action has the further advantage that it makes plain early the existence of the infectious process or the commencement of new centres. The affected membrane assumes a white colour, owing to the formation of a fine foam, due to the liberation of oxygen gas. The remedy may be applied on a small swab, or by means of the spray. If the false membrane is thick, the nozzle of a long thin syringe of stout glass may be pushed through the membrane, and a few drops of the solution squeezed out. Much importance is to be attached to the acidity of the solution, and Williams states that laboratory experiments made for him by A. P. Mathews show that solutions of perchloride of iron have no greater germicidal power (*in vitro*) over the cultivation of the bacillus of diphtheria than solutions of hydrochloric acid containing the same quantity of acid.—*British Medical Journal,* Nov. 18th, 1893.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. ALLAN JAMIESON, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

SEBORRHŒIC ECZEMA.—Unna, in an exhaustive paper, has furnished us with his latest views on this subject, which we propose to summarize. All forms of seborrhœa, with exception of the oily variety, which he regards as an oily hyperhidrosis, and the vernix caseosa, are inflammatory catarrhs, inflammatory keratoses of the skin. Seborrhœic eczema is characterized, like other forms of eczema, by three features:—(1.) Parakeratosis, that anatomical change which results in desquamation. If there should be much exudation, there is also intercellular œdema, with the production of intercellular spaces. (2.) A tendency to mitotic proliferation of the epithelium. (3.) Inflammation of the cutis, commonly slight, and characterized by the ordinary symptoms of inflammation. It is much less important than the parakeratosis; the tendency exhibited by chronic eczemas to recur does not depend on persistence of the inflammation of the cutis, but on the spongy transformation of the epithelium, which is part of the parakeratosis, and as specially distinctive. (4.) Indications of increased activity of the coil-glands, with an abnormal amount of cutaneous fat. The peculiar yellow colour of most forms of seborrhœic eczema has not yet been clearly explained. Various reasons are given for believing that the augmentation of fat is explicable on the assumption of a pathological alteration in the sweat-glands. Thus Unna states that in sections embracing the crusts, that portion above the sweat-pores is distinguished by a darker osmium staining, the pores themselves are dilated, that the contents of the coil shows a greater number of black points, and the neighbourhood of the coil is permeated by many free fat granules, the epithelium is large, the lumen of the gland dilated, and, lastly, that there are numerous mitoses in the gland-cells. The cause of this form of eczema Unna finds in the constant presence of peculiar micro-organisms, which he calls morococci, from the mulberry-like aggregation which they assume. Their growth depends on the presence of oxygen; they do not flourish deep in the inoculation puncture, and in the crusts and scales they occur near the surface. By their chemotactic influence they can exert an effect from thence to a considerable distance. One weak point in Unna's theory is this, that he has found morococci in other parakeratoses and in eczemas which are not seborrhœic. It is not therefore a proven fact that they are the prime cause of it. As to the clinical appearances, seborrhœic eczema spreads from the crown as its starting-point from above downwards, yet there are atypical forms in which this is not so evident. The proportional frequency of this form of eczema is yet uncertain, but as Unna seems inclined to include under it some varieties of rosacea, some apparent instances of trichophytosis, some atypical cases of pityriasis rosea, the so-called eczema marginatum, and annular eruptions classed by some as psoriasis, the disease covers a pretty wide area. A fruitful field for the varieties of seborrhœic eczema is the sternum and infraclavicular region in front, the interscapular one behind. Another prominent feature is the predisposition to peripheral advance and central cure. This is most marked on the trunk, and in particular on the thorax, where it is well known that patches of psoriasis readily become rings and festoon-like bands, and thus simulate very closely the annular forms of seborrhœic eczema. Perspiration, and still more, wearing for a long time underclothing, particularly woollen, impregnated with sweat, promotes not only the extension and auto-inoculation of the complaint, but aggravates all the symptoms, the hyperæmia, the greasiness of the scales, and the tendency to weep. The treatment of the early stages is well given. The most rapid and simplest treatment of pityriasis capitis consists in the application of a sulphur pomade of from one to nine per cent. This should be rubbed in twice a week by an experienced hand, after the remains of the former application and the scales have been removed by washing with sp. saponat. kalinus. This should be done as an adjuvant and prophylactic during and after the treatment of all seborrhœic eczemas of the body. If the yellow dust deposited in the scalp renders this method unsuitable, a two to three per cent. resorcin pomade may be used instead, eventually with the addition of one in a thousand of corrosive or one per cent. of sulpho-carbolate of zinc. Should the falling off of the hair be considerable, two to ten per cent. of tincture of cantharides may be added to the sulphur pomade. Crusted papules on the scalp require a paste treatment, and the same may be said of pale or hyperæmic macules on the face which scale or tend to weep. The following is recommended :—℞ Zinci oxidi, 6·0 ; Sulphuris ppt., 4·0 ; Terræ siliceæ, vel. ; Kaolini, 2·0 ; Adipis benzoat., 28·0. This should be carefully rubbed in in considerable amount twice or thrice a day. If there are thick scales or crusts these are to be previously washed off with spirit of soap. Should the skin become rough, the treatment must be intermitted for a day or two till by use of glycerine jelly or cold cream the softness returns. If it is desiderated to increase the activity of the paste, this is best done by adding, in hyperæmic cases, five to ten per cent. of ichthyol, in anaemic the same proportion of resorcin, rather than by increasing the amount of sulphur. In cases with much epithelial proliferation, a chrysarobin ointment must be used at the beginning or end. ℞ Chrysarobini, 5·0; Acidi salicylici, 2·0; Ichthyoli, 5·0; Vaselini, 88·0. This is continued till the reaction of the skin to chrysarobin becomes distinct, then is replaced by the zinc-sulphur paste. In cases where a milder, slower treatment is desired, one which acts continuously, demands less supervision, and is particularly useful in irritable skins or in patients at a distance, the constant or nightly employment of resorcin-evaporating dressings fulfils such indications. ℞ Resorcini glycerini, āā, 10·0; Spiritus, 180·0. To be diluted when used with four parts of water or chamomile tea. This is used as a water dressing covered with guttapercha tissue. It is extremely soothing to the itching. If used only at night it can be replaced in the day by the zinc-sulphur paste. Seborrhœic rosacea needs, in addition to the same paste, one or more peelings with the following:—℞ Zinci oxidi, 4·0; Terræ siliceæ v. kaolini, 1·0; Adipis benzoat., 15·0; Resorcini, 20·0. In other respects the treatment is that of eczema.—Volkmann's *Sammlung klinischer Vorträge*, No. 79, September 1893.

The Treatment of Itching.—Dr E. B. Bronson has concluded his series of studies on the subject of pruritus by some remarks on its treatment. The chief underlying condition in pruritus is hyperæsthesia, whether in its common signification of an excessive irritability of the sensory nerves, or in the sense of an excess of nerve excitement. The prime indications are therefore to allay the former and to divert or annul the latter. He divides the measures applicable for the relief of itching into:—(*a.*) Measures to remove local excitants. These include such as prevent scratching. Among these are the use of milder means, as firm pressure, or stroking the itching surface with the finger-pulps, or with a soft cloth or brush (especially if first lubricated with vaseline), using some pressure but without rapid motion. Irritating contacts of all kinds must be avoided, as regards underclothing or immoderate temperatures, particularly sudden changes. (*b.*) Sedatives. Used internally these are apt to be disappointing. Narcotic sedatives are objectionable, but bromides are often indispensable. Cannabis indica and gelsemium have both proved useful, the last especially in protracted cases of urticaria. Of local remedies carbolic acid stands at the head. The two to five per cent. solutions, though frequently of benefit, do not bring out its full antipruritic effect. The following oil he has largely employed, both in the local and in the so-called universal forms of the disease, with no more untoward result than now and then a trifling dermatitis, if the applications have been made too frequently or continued too long:—℞ Acid carbolic, 1·0–2·0; Liq. potassæ, 1·0; Ol. lin., 8·0. (*c.*) Sensory stimulants. By this is meant those which enhance the higher and perceptive sensibilities of the skin. Of these, electricity, in the form of galvanism or faradism, has done good. And in atonic pruritus, strychnia is a remedy of value. (*d.*) Substitutive irritants. The idea is to reflect the irritation back to its original source, or taking the initiative as aggressor, to invade some inoffensive region that may be made to sympathise with the skin, and make it bear a part of the skin's burden. This seems to be the way in which menthol works; it relieves itching chiefly, if not solely, through substituting an exaggerated temperature sense for the perturbed sense of contact, or for the sensation of pain. It may with advantage be combined with the salol or thymol. (*e.*) Alteratives of cutaneous nutrition. They include not only absorbent and anticatarrhal remedies to remove the products and curtail the processes of incidental inflammations which may act as contributory causes of the itching, but such agents as tend to control blood-supply and overcome hyperæmia. In this manner probably jaborandi acts. Many of the agents that allay itching are oxidizing ones, and so peroxide of hydrogen is valuable as a toilet wash, used two or three times a day in cases of pruritus universalis. (*f.*) Motor depressants. Of these atropia is an example, but its good effects in urticaria, when employed in full doses, is due not to its primary but its secondary effect, this being to induce relaxation of the muscles and dilatation of the vessels.—*New York Medical Record*, October 14th, 1893.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S.

Syphilis of the Spinal Cord.—In the Berlin Medical Society the following discussion took place on November 15th:—

Prof. Gerhardt.—During the period of eight years that I was in charge of the Lock Wards I observed 39 cases of syphilis of the nervous system, in 9 of which the spinal cord was involved. I also observed two cases of syphilitic disease of the vertebra,—a rare affection when compared with tuberculosis, which is so frequently met with in the bones of the vertebral column. Syphilis may affect every part of the spinal cord, from the meninges and vessels to the cord tissues proper. The latter is, however, very seldom primarily involved, the changes found in the cord tissue proper being usually secondary to disease of the bloodvessels. Spinal meningitis is sometimes met with as one of the early manifestations of syphilis; in fact, it may appear as early as the third month after infection. On the other hand, it may not develop until ten or even twenty years after the primary sore. In some cases the affection is secondary to cerebral meningitis; in others it is the reverse. I have recently had under my observation a man, aged 35, who contracted syphilis in 1876. In 1878 he suffered from syphilitic ulcerations of the mouth and pharynx, which disappeared under the influence of mercury. He was subsequently seized with an attack of paraplegia associated with pain in the inferior extremities. These manifestations also disappeared, only to be replaced very soon afterwards by paralysis of both legs and one arm—a sort of triplegia. This is a form of paralysis which is almost absolutely characteristic of cerebro-spinal meningitis. Syphilitic paraplegia is also met with as the result of the rupture of one of the spinal vessels. I remember the case of a patient suffering from tabes and syphilis who was suddenly seized with an attack of paraplegia complicated by paralysis of the bladder. These manifestations, which may be regarded as a sort of syphilitic apoplexy, subsided under specific treatment. Certain forms of muscular atrophy and acute syphilitic paralysis have also been attributed to the presence of lesions of the nerve roots. There can be no doubt that syphilis is the cause of many a case of disease of the nerve roots. It is easy to understand that the nerve roots should be involved in cases of syphilitic meningitis. The same remark holds good in certain cases of herpes zoster. I once had a case of hemiplegia with herpes under my observation in which there was a distinct history of syphilis. All these manifestations disappeared under specific treatment. The great majority of my patients presented the group of symptoms described by Erb as characteristic of spastic spinal paralysis of syphilitic origin. This form of paralysis usually commences as a slowly advancing hemiplegia, from which the patient may wholly or partially recover. As a general rule the sphincters are more or less involved in these cases, the first symptoms occurring, according to my own experience, about four years after the primary manifestation. About a third of these cases of syphilitic disease of the brain and spinal cord recover, provided the real nature of the affection is recognised early in the case. Needless to say that recovery is impossible if the affection has gone on to softening or degeneration. The relationship which is said to exist between syphilis and tabes has been disputed by various authors. Out of 102 cases under my observation, in 51 there was a history of syphilis. The statistics that have been published on this subject show that the connexion between syphilis and tabes is becoming more evident every year. Cases of tabes are occasionally met with which improve under specific treatment.

Prof. A. Frænkel.—The specimens before you were obtained from the body of a man, aged 69, who had contracted syphilis in 1861. On admission he was found to be suffering from paraplegia, with paralysis of the sphincters. Cutaneous sensibility was abolished over the affected limbs, the anæsthesia extending as high as the upper part of the trunk. At the autopsy the presence of cerebro-spinal pachymeningitis was discovered. I saw 65 cases of tabes (46 males and 19 females) at the Urban Hospital; 50·7 per cent. of these patients were syphilitic.

Prof. Mendel.—I have had occasion to observe a case of Erb's spastic spinal paralysis in a man whose mother was infected at the time of conception. The patient, who is at present 32 years of age, is the subject of congenital syphilis. The first symptoms of paralysis appeared when he was six years of age. For the last twenty years I have maintained that there is a very close relationship between tabes and syphilis. According to my own statistics 70 per cent. of tabetics are syphilitic.

Prof. Senator.—I myself believe there is a relationship of some sort between syphilis and tabes. According to my own experience from 70 to 75 per cent. of tabetics have a history of syphilis.

Dr Guttmann.—In several cases of tabes with atrophy of the optic nerve I have succeeded in arresting the progress of the affection by the administration of mercury. For example, in the case of a man aged 50 the acuity of vision increased from $\frac{1}{8}$ to $\frac{11}{9}$, under the administration of pills containing calomel.

Prof. Lewin.—There can be little doubt that syphilis predisposes to tabes, but it seems to me that the time of occurrence of the "reminders" is not determined with sufficient accuracy in such cases. The failure of specific treatment under these circumstances may be accounted for by the formation of a toxin which neutralizes the action of mercury.

Prof. Virchow.—From an anatomo-pathological point of view there is no evidence of any causal relationship between syphilis and tabes, nor is it possible, clinically speaking, to decide the question from the information furnished by the "reminders" alluded to, seeing that syphilis is practically of universal distribution. Moreover, there is nothing in the evolution of tabes that can be compared with what is known as visceral syphilis, which tabes would most likely resemble if it were in any way dependent on such a cause. But tabetic patients present no symptom of visceral syphilis, nor is any tabetic lesion observable in grave cases of visceral syphilis. I am prepared to admit that this is no absolute demonstration of the non-existence of the relationship which is said to exist between syphilis and tabes, but the evidence in favour of the latter hypothesis is strong enough, in my opinion, to induce me to suspend judgment on this much debated question.

Prof. Gerhardt.—Although no anatomical demonstration can be given of the causal relationship between syphilis and tabes, the existence of such relationship is evident from the facts of clinical observation.—*The Medical Week*, Dec. 1, 1863.

ENURESIS DIURNA.—In *The American Practitioner and News*, May 20, 1893, Dr F. C. Simpson gives his experience in the treatment of this troublesome affection. One of the most frequent causes is in tight prepuces. Yet when the prepuce is stretched, or circumcision performed, the trouble remains as bad as before. Even after the removal of certain nervous troubles, the child continues to wet his clothes. When a child does not get well under ordinary treatment, the probable cause for the incontinence is masturbation; and when he is treated for masturbation he gets over the incontinence. A close watch must be kept on him, for he will repeat the act so soon as the blisters heal. The constant irritation of the parts by self-abuse leads to a chronic inflammation of the whole prostatic portion of the urethra and the neck of the bladder, which is very sensitive. He finds this condition to occur in children from five to eight years of age. He speaks only of the class that are free from the trouble at night and suffer during their waking hours. Two cases occurred with tight prepuces, and they were circumcised, with relief as long as the wound did not heal, and as soon as the parts were well they would return to their old habits. Afterwards they were blistered along the dorsum of the penis and down on the perineum. They kept well as long as the blisters remained open and for some time afterward, and then they began their old habits of playing with the parts, and the incontinence returned. The blisters had to be repeated three or four times before the trouble was controlled. These children are very nervous little fellows. They have loss of appetite, seem to be debilitated, and show some mental hebetude.

CREAM OF TARTAR IN THE TREATMENT OF CERTAIN VENEREAL DISEASES.—Dr E. Oteri, an Italian physician, has discovered that cream of tartar is apt to prove useful in the treatment of gonorrhœa and venereal sores, by reason of its absorbent and antiseptic properties. The following is the formula employed by Dr Oteri for urethral injections in cases of gonorrhœa:—

℞	Cream of tartar . . .	ʒiij.
	Distilled water . . .	℥iv.

F. S. A.—The bottle to be well shaken before use.

According to this observer, these injections are sufficient to relieve the inflammation and arrest the discharge. Soft chancres and suppurating buboes are said to heal up rapidly under the influence of powdered cream of tartar, which presents the great advantage of being absolutely inodorous.—*The Medical Week*, Dec. 1, 1893.

ARISTOL IN VENEREAL ULCERS. — Güntz (*Sonderabzug aus Memorabilien*, xxxvi. 292) recommends aristol in venereal affections when iodoform is objected to on account of its penetrating smell. Unlike the latter, it is odourless, and a powder insoluble in water, but readily dissolved by olive oil, one drop sufficing to liquefy a quantity of aristol as large as a pea. As this forms a tenacious compound difficult to apply, Güntz recommends the application of the powder in the first place, with the subsequent addition of 1 to 2 drops of oil, the whole being covered with a thin waterproof covering, and changed two to three times daily. When numerous ulcers exist around an unduly long prepuce, he prepares the solution in the middle of a sufficiently large square piece of guttapercha tissue, turning up its corners towards the root of the penis. This is lightly surrounded with cotton-wool, and the whole kept in position with an india-rubber ring of moderate tightness. The ulcers are thus in constant contact with the aristol, and the patient is able to get about. Nevertheless, Güntz points out that with extending or torpid ulcers, an occasional temporary substitution of iodoform may be necessary. Aristol, however, is particularly applicable in hard chancres, secondary syphilitic ulcers, etc.—*Brit. Med. Journal*, Nov. 25, 1893.

OCCASIONAL SURGICAL PERISCOPE.

By Alexis Thomson, M.D., F.R.C.S.E.

Operations on the Stomach and Intestine in the Surgical Clinique at Heidelberg.—This is the title of a paper, by Czerny and Rindfleisch, in the *Beiträge zur klinischen Chirurgie*, Band ix. p. 661, from which we have made the following extracts:—

The stomach was resected for cancer twelve times, of which five died from the operation, and seven left the clinique in good health. Of these seven, two are still alive and well, without signs of recurrence, fifteen and sixteen months respectively after the operation, while the remaining five died of recurrence at two, seven, ten, fifteen, and eighteen months after the operation. It is hinted that the temporary respite afforded by the surgeon is a greater boon in stomach cancer than in many others, because the pleasure of eating and drinking is regained.

For sarcoma involving the wall of the stomach excision was performed in two cases, both of which made a good recovery. One died of recurrence thirteen months later; the other is still alive and well, two years after the operation.

For non-malignant pyloric stenosis resection was performed in five cases: one, a case of stenosing gastric ulcer, is alive and well, after ten years; a second, a case of stricture from poisoning with alkali, is well, after four years. Of the three remaining cases two died,—one from suture necrosis, and another from inhalation pneumonia. Leaving out the cases of sarcoma treated by elliptical excision, sixteen pylorectomies were performed, with seven deaths from the operation,—a mortality of 43·7 per cent.

Gastro-enterostomy was performed in twenty cases, of which twelve recovered and eight died, equal to a mortality of 40 per cent. In recent years the results were very much better, for the last six cases all recovered. In three the stenosis was due to the cicatrization of ulcers; in seventeen there was a cancer of the pylorus. Velden's test for free hydrochloric acid gave valuable results: out of fifteen cases, free acid was found in three, and in each it was found that the stenosis resulted from the healing of innocent ulcer;

while in twelve carcinomata there was no free acid discovered. As has been mentioned, the mortality was chiefly in the earlier operations; death resulted in two cases from septic peritonitis, in four from collapse, and in two from inhalation pneumonia. The choice between pylorectomy and gastro-enterostomy in cancer cases depends on the degree of localization of the tumour, the presence of adhesions, and of metastases. Those cases do best in which rectal feeding can be maintained for eight days after the operation.

Enterectomy for cancer of the bowel was performed in ten cases, of which five recovered and five died; four deaths were due to septic peritonitis; one resulted from collapse. The cancer involved the large bowel in all the cases, as follows:—Cæcum, 4; transverse colon, 3; sigmoid, 2; descending colon, 1. In the cases which died of septic peritonitis the peritoneum was infected at the operation by intestinal contents, and death resulted in from one to three days. One of the recoveries died six months later of recurrence; the remaining four are still alive, at ten, eighteen, twenty-one months, and six years after the operation. If the patient be much reduced, and the tumour fixed, it was found better not to proceed at once to the radical operation, but to make an artificial anus above the tumour in the first place, and get up the patient's strength. The most favourable cases are those in which a small scirrhus early causes stenosis, and therefore gives rise to symptoms at an early stage.

Enterectomy for tubercular tumours and stenosis of the bowel was performed in eleven cases, in nine of which the lesion involved the ileo-cæcal region, and in three of these there was an external fistula. The majority improved and gained weight after the operation.

For intussusception of the bowel an operation was performed in five cases; one of these ended fatally after resecting 72 cm. of the bowel for gangrene after obstruction lasting for nine days. In two the invagination was successfully reduced without resection. In a fourth case 51 cm. were resected after an invagination lasting for five and a half months, in which reduction was impossible owing to torsion of the intussusception. Chronic cases were found the most favourable for operation. *In summing up the results of all these operations the authors state confidently that, with better selection of cases and better technique, they will reduce the general mortality of intestinal resections to* 10 *per cent.!*

Technique of stomach and bowel resections: the operations were performed in the general theatre before an audience. Attention was chiefly directed against contact infection, although before the operation the theatre was purified by the carbolic spray, and the latter was also kept going during the operation, chiefly because of the moist atmosphere thus obtained. The patient's alimentary tract was thoroughly cleared out, and the diet restricted to fluids for two days before the operation. In stomach cases the viscus was repeatedly washed out beforehand with boracic or salicylic lotion. It was found difficult to empty the bowels in cases of intestinal stenosis; several days were required, and the bowels were attacked both from above and below. When there was no time for this, or it could not be accomplished, they adopted König's plan of emptying the upper bowel at the time of resection, because of the severe strain which the loaded gut makes on the sutures. Silk was always used instead of catgut for all intra-peritoneal operations. Morphine was first given with the needle, then chloroform, and then ether. For details of suturing, etc., we refer our readers to the original.

SENSATION OF FOREIGN BODY IN THE PHARYNX DISPELLED BY COCAINE.—Dr Alfred Martin, in the *Archives de Laryngologie*, June 1893, refers to cases met with in practice from time to time in which the patient, applying for the removal of a foreign body supposed to be lodged in the pharynx, having had cocaine applied for purposes of examination, is relieved of the symptoms by the application of the drug without any foreign body being discovered. Dr Martin therefore recommends, in cases of suspected foreign body in the pharynx or larynx, that recourse should be had to cocaine in the first instance, and if the sensation and other symptoms disappear, it is unnecessary to institute a search for that which does not exist.

A NEW AND SAFE METHOD OF CUTTING ŒSOPHAGEAL STRICTURES. —Dr Robert Abbe of New York, in the *Medical Record* for February 1893, proposes the following method for the treatment of tight traumatic strictures low down in the gullet. Several observers have demonstrated that in the majority of strictures, low down, which will not admit of even the smallest bougie entering from above, it is possible to enter the opening from below through a gastric incision. Supposing, however, a fine bougie to have been introduced from the stomach, it is not practical or safe to stretch or divide strictures which are dense and extensive; and to obviate the risks of cutting internally in such cases Abbe has practised the division of the stricture with a string, the tissues being made tense by dilating with a bougie at the same time. Experience showed, in the case cited, that when the dilatation had been carried to its utmost limit by a small conical bougie, a string previously passed through the stricture being drawn to and fro, the dilating bougie could be rapidly advanced, where before it had come to a standstill in spite of any legitimate force that had been used. This advance was made with the loss of only a few drops of blood, and by such rapid strides that only four bougies were needed to enlarge it from the size of the smallest to one as large as the normal œsophagus could bear.

Part Fifth.

MEDICAL NEWS.

INTERNATIONAL MEDICAL CONGRESS.

We have been requested to insert the following particulars received from Prof. Maragliano, General Secretary:—"In consequence of the adjournment of the Congress at Rome, Arts. 1 and 2 of the statute have been altered as follows:—Art. 1. The XI. International Medical Congress will be inaugurated in Rome on the 29th March 1894, and will close on the next following 5th April. Art. 2. Papers to be read before the Congress should be announced not later than the 31st January 1894. The title should be accompanied by a very short *précis* of the paper, and by the conclusions; the latter will be printed by care of the Board, and distributed among the members. Papers announced after the 31st August 1893 will be marked in the provisional programme with an asterisk. The provisional programme will contain also those previously announced papers which have been published in scientific papers after the adjournment. The railway companies have established that the reduction of fares should be available from the 1st of March till the 30th of April 1894. The travelling tickets of membership and railway passes will be sent by the Secretary-General's Office to each member enrolled before the 14th February 1894. After this date the said papers should be applied for by members residing in the United Kingdom to the following gentlemen:—Dr G. H. Makins, London; Dr G. A. Gibson, Edinburgh; and Prof. Sir William Stokes, Dublin. The first edition of the provisional programme is going to be printed, and will contain details concerning the Congress, and a list of all the papers announced till November 15th, 1893.

"It should be well to remember the following articles of the statute:—Art. 2. All physicians are admitted to have a part in the work of the Congress, provided they have satisfied the conditions of inscription and obtained the required ticket of membership. Art. 3. The doctors of other sciences who, for their special studies, should have an interest in the work of the Congress may be enrolled, with the duties and rights of the members of the Congress who are doctors of medicine, being entitled to partake of the work, either by reading papers or by having a part in the discussion. Art. 4. The admission fee to the Congress is fixed at twenty-five franks = £1 sterling; it entitles to a copy of the report of the Congress, which will be forwarded to the members as soon as it is published. Art. 17. The persons who, not being comprised in the article, are interested in the work of a section, may obtain admission by consentment of the President of the Congress. Such persons will receive a special ticket, and will pay the admission fee like the other members, being entitled, however, to a copy of the report of the Congress. The persons thus admitted to the Congress may speak neither in the general sittings nor in the sittings of the sections to which they are not enrolled. Art. 18. The students of medicine may be invited or admitted by the President to attend the sittings, but only as hearers. They must obtain a special ticket, which will be granted them without payment.

"Members may apply to the Secretary-General's Office for railway passes for their wives and adult members of their families; the latter may be enrolled on payment of a fee of *ten* francs. Medical gentlemen and all persons who wish to take part in the Congress are requested to give their name as soon as possible, writing on this purpose to the Secretary-General to the XI. International Medical Congress, Genoa. Fees should be paid by post-order or draft to the Treasurer, Prof. L. Pagliani, M.D., Director-General to the Office of Public Health, Home Department, Rome."

EIGHTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY, BUDAPEST, 1894.—The next, the Eighth International Congress of Hygiene and Demography, will be held at Budapest in September of this year, under the high patronage of His Imperial and Royal Majesty the Emperor of Austria. The Executive Committee especially desire to realize as far as possible the decisions of the London Congress. Special International Committees have been organized. With regard to several decisions accepted at the London Congress, they are at present occupied with the solution of the various questions thus mooted. To England it will be of some special interest to know of one important decision that was accepted at the instigation of the London Congress. This decision refers to the organization of a separate section for tropical countries. The President of this special section will be Dr Theodore Duka, and the two Secretaries will be Dr Isambard Owen and S. Digby, Esq. These gentlemen kindly consented to accept these posts, and are now engaged arranging the programme of this section. The Hon. Presidents of the several sections will be elected by the Executive Committee as soon as the names of those foreign celebrities shall be known who will take part in the Congress. After the termination of the Congress several excursions will be arranged, amongst which one will be to the Trongate on the Lower Danube, to Belgrade, and to Constantinople, which doubtless will be of some attraction.

TARRHOL.—Messrs John Bell & Co., Pharmaceutical Chemists, Oxford Street, London, have sent us some specimens of Tarrhol, a compound combining the active medicinal properties of tar and sulphur. This is a dark brown liquid, which has an odour, tarry no doubt, but *sui generis*. Though not soluble in water, it can be readily mixed with oils or ointments, incorporated with a zinc gelatine basis, or united with soap. Tried in some cases of chronic eczema it did not appear to act differently from the pure tars, and, indeed, was not particularly well borne, but this is a pretty constant experience with all tars in eczema. The soap, containing ten per cent., when used as a lather before immersion for an hour in a simple warm bath, caused the patches of a psoriasis already on the wane very rapidly to disappear. The compound is certainly worth being further experimented with.

SUPERFATTED ONE PER CENT. BINIODIDE SOAP.—This soap, which is stated to be made by Messrs Bronnley & Co., London, but which has been sent us by Messrs Sumner & Co., Liverpool, is declared on the cover to be non-poisonous. We infer from the name that it is one containing the biniodide of mercury, and if so, as the cake weighs rather more than three ounces, it must contain fully fifteen grains of that salt. We can hardly, therefore, regard it as non-poisonous. On what basis the other claims set forth on the label rest we have no means of judging, as no proof is afforded, but it is there declared that it will cure ringworm, itch, and all other foul and ulcerative disorders of the skin caused by animacules. It is said also that it will prevent baldness of the head when caused by disease of the hair bulbs, the penetrating agents enabling it to reach the seat of the disease and destroy all germs. With respect to it we fear we can but echo the words of Horace, "Credat Judæus Apella, non ego," till conclusive proof of these rather wide assertions be provided.

THOSE who are partial to that most exquisite and costly of all scents, Otto of Rose, will be interested to learn that the peasants who produce it in Bulgaria have largely given up raising grain in order to raise roses. Whereas the price of otto in large quantities three years ago came out at a ha'penny a drop, it now reaches from a penny to twopence a drop. Eight teaspoonfuls (an ounce) of otto would now cost from two to three pounds, and a small canister not as large round as a dinner plate and about three inches thick would cost from two to three hundred pounds. The unprecedented demand appears to have been created by the "Vinolia" Soap Co., which consumes annually thousands of pounds' worth of otto in Toilet "Vinolia" soap, and which has advertised an Otto Toilet Soap everywhere, and so popularized this scent to an unprecedented extent. There has been quite a storm among the manufacturers of Toilet scents in France and elsewhere in consequence of the present high price, due to a certain firm of agents in Turkey buying up the bulk of Otto and so running up the price. Many manufacturers will now have to raise the prices of their products, or else reduce the quantity they use of the expensive otto. The manufacturers of "Vinolia" Soap are advertising that the price and quality of "Vinolia" Soap shall not be altered, but it is currently reported that they are not making any profit this year on their Otto Toilet Soap, though they held a very large quantity of the scent before the present extraordinary prices were reached.—*Exchange.*

OBITUARY.

THE LATE DR ROBERT FOULIS.

Robert Foulis, M.D., who died at Cairnie Lodge, near Cupar-Fife, on 28th November, at the age of 72, practised for many years in Edinburgh, devoting himself chiefly to the poor. He was a most devoted and beloved worker at the New Town Dispensary, and did his best to infect his pupils with his own enthusiasm for visiting the poor in their own houses. Among other schemes for their benefit, he fitted up a house which belonged to him in the Grassmarket as a model lodging-house, one of the first of its kind, and managed it with success. He took great interest in the blind, and invented a tangible ink,—for which he received a gold medal from the Society of Arts,—that they might read manuscript as well as print, and did much for the improvement of their education, especially in music, which he gave them the means of reading by raised characters on the sol-fa system. A good musician himself, he helped to compile, along with Mr Hately and others, the collection of psalm tunes first used in the Free Church.

He had considerable powers of mechanical invention, and wished to become an engineer, but his trustees (his father, Major-General Sir David Foulis, who had served in India, having died when he was young) thought that the prosperous days of that profession were past, the railway mania being over, and put him into a bank. That he soon gave up for the study of medicine, attracted chiefly by the surgical side of the profession. In 1862 he retired to the little estate of Cairnie Lodge, which he farmed successfully. Keen in adopting improvements himself and in persuading others to do the same, his "silos" for preserving food for cattle in winter were among the first constructed, and he continued them with good results when others failed. He was a useful county magistrate, and acted on the Prison and Asylum Boards.

He had many warm friends. Like his mother, Lady Foulis, well known in Edinburgh, he was a devoted adherent of the Free Church.

His first wife, a daughter of the late Mr James Stevenson, of Randolph Crescent, Edinburgh, left three daughters and a son, who, with his second wife, survive him.

Part First.

ORIGINAL COMMUNICATIONS.

I.—MORISON LECTURES ON INSANITY.

By JOHN BATTY TUKE, M.D., F.R.C.P.E.

(Delivered before the Royal College of Physicians of Edinburgh.)

LECTURE I.

MR PRESIDENT AND GENTLEMEN,—My intention is to study in the following course of lectures the methods of action of certain of the proximate causes of insanity, and to indicate what I believe to be the principles of treatment founded on these considerations. It will be manifestly impossible to cover the whole ground, and I shall therefore restrict myself mainly to investigating the *modus operandi* of one of the most important morbid influences productive of insanity,—over-exertion of the brain; and, further, will confine myself almost exclusively to the study of its action during the earliest stages of the condition produced; the stages during which the practitioner of medicine has for the most part to deal with them, and during which the deranged cerebral apparatus is in a state to react to therapeutic measures.

I find my general position in regard to the insanities so well stated by Creighton in the opening sentences of his article on "Pathology" in the ninth edition of the *Encyclopædia Britannica*, that it would be sheer piracy were I to attempt to render his expressions in my own words. I therefore quote them, —"Although it is laid down, in the opening sentences of the Hippocratic treatise *de prisca medicina*, that the medical art, on which all men are dependent, should not be made subject to the influence of any hypothesis, that the care and cure of the sick should not be subordinated to pathological theory, but should be guided by experience; yet the practitioners of medicine have at no time been able to dispense with theory, not even those avowed followers of the Hippocratic tradition who, while they professed a kind of quietism amidst the rise and fall of systems, have none the less been profoundly influenced by theory at every step of their practice. The position of Cullen is the only rational one: 'You will not find it possible to separate practice from theory altogether;

and, therefore, if you have a mind to begin with theory, I have no objection. . . . . *To render it safe, it is necessary to cultivate theory to its full extent.*' The progress of pathology hitherto has been exactly parallel with the progress of philosophy itself, system succeeding system in genetic order. No other department of biological science has shown itself so little able to shake off the philosophical character, or to run in the career of positivism or pure phenomenalism. This unique position of pathology among the natural sciences is doubtless owing to the fact that it is a theory of practice,—a body of truth and guesswork existing for the benefit of a working profession which is daily brought face to face with emergencies and is constantly reminded of the need of a reasoned rule of conduct."

It is on these lines that I propose to work, and in so doing it will be necessary to touch here and there on certain points which were partially dealt with in the course of Morison Lectures delivered by me in this hall some twenty years ago, and to endeavour to bring into line the results of certain observations and theories which have been made and advanced in the interval.

In a popular article published some years ago in the *Nineteenth Century Review*, I endeavoured to show the social influences which had induced the public and the profession to regard insanity as a disease of the mind,—the prominence of the symptoms, the almost total ignorance of brain anatomy, physiology, and pathology, and the necessity of protection of the public and the lunatic, combined to direct the feelings of all concerned in the direction of insanity being regarded primarily as a perversion of the intellect. The popular conception of the condition had been from the earliest ages down to a not very remote period entirely psychological; at the best it had been but a rude mixture of a pseudo-psychology and of a pseudo-pathology, identical with what we find in the pages of Burton. Medical science had not been in a position to exercise any definite influence on popular views from a strictly professional point of view, inasmuch as the physician's conception of the condition had been in no way different in degree or in kind from that of the general public. The views of Medicine regarding insanity at the end of last century remained practically unchanged from those of the Middle Ages; its character as a symptom of disease being pretty generally recognised, but the recognition being accompanied by the feeling that it differed in some mysterious way from all other diseases. It was therefore inevitable that the psychological principle should find expression in nomenclature, and that the original Hippocratic classification of mania, melancholia, and dementia should be adhered to down to within the last thirty years. Let me cite (or, rather, re-cite) a prominent example of the long and strong survival of the psychological principle. In the first issue (1871) of the official

"Nomenclature of Diseases drawn up by a Joint Committee appointed by the Royal College of Physicians of London," all the insanities were ranged under six "Disorders of the Intellect," a severe line being drawn between them and diseases of the general system. Therapeutic treatment was necessarily affected by this crystallisation of false theory, and was conducted mainly on humanitarian lines. In point of fact the spirit of scientific medicine lay almost dormant in so-called alienistic practice.

Concurrently (or, at least, almost concurrently) with the advances made in nervous anatomy, physiology, and pathology during the last thirty-five years, the views of the specialty of so-called psychiatric medicine have become to some extent altered or modified as regards nomenclature. Etiology has, in theory, if not in practice, been adopted instead of mere symptomatology as a basis of classification; and, of late years, the habit has been growing of connecting in nomenclature what is believed to be the cause of the morbid mental symptoms with the general character of the symptoms themselves. The various etiological nomenclatures which have been advanced have served the good purpose of keeping before the mind that insanity is merely a symptom of somatic disease (using the word disease in its widest sense); by deflecting the observer from the misconception involved in the term "Mental Disease," and by focussing his attention on the phenomena following on actual or presumed causes, they have directed inquiry as to consequent alterations in tissue. They have acted as guides to the higher pathological platform, to the study of the changes in the apparatus of the central organs through which consciousness is manifested, and the implication of which we have every right to assume is productive of morbid mental phenomena. There is every probability that we will have to retain this system of classification for many years to come as a provisional arrangement, notwithstanding that grave errors are apt to arise from its being employed on merely *prima facie* evidence of the connexion of cause and effect. There is even a possibility that its terminology may become permanent in consequence of a definite pathological meaning becoming attached to many of the presently recognised etiological groups. It is only too true that we have not as yet advanced very far on the road; but, when such work as that of Lockhart Clark, Betz, Deiters, Meynert, Golgi, Ramon y Cajal, Obersteiner, Retzius, Bevan Lewis, and others, is considered, it is evident that we have some reason for the hope that the study of the insanities will in future be conducted on the same scientific principles that govern our views of disease at large.

I have sometimes speculated, and it seems to me not unprofitably, upon the attitude which the profession would assume if a case of so-called acute mania, or of so-called acute melancholia, were introduced to it for the first time. In order to place you in the same position for speculation, I am going to ask you to try to put out of your minds that you have ever heard or read of such cases, to make a *tabula rasa* of experience, opinion, and feeling, in respect of such insanities. Let us try to imagine that two cases are introduced to us presenting a congeries of symptoms which had not previously come under our observation, the most prominent in each being a degree of mental alienation. The first, a man whose general bodily condition is poor, muscles flabby, face pale and wearing an anxious expression, pulse quick and irritable, temperature slightly above the normal, skin clammy, blood reduced as regards number of corpuscles and amount of hæmoglobin, bowels costive, oxalates or phosphates in large quantities in urine; he is reported to be sleepless, the whole system is generally out of tone, but no active disease of any organ is detectable: he is wringing his hands, is restless, cries out that his soul is lost, and, in a word, is deeply melancholic, and is reported to have attempted suicide. The second case—a woman—presents much the same bodily symptoms, but in addition the temperature is higher, and menstruation has been arrested; mentally she is exalted, as shown by general and verbal expression, and she may be the subject of some extravagant delusion. It is stated that in both cases the patient had suffered for long from serious anxieties and sorrows.

I submit that, under the circumstances we are supposing, the mind of the College would not turn to the idea contained in the term "mental disease," and that first impressions would lead to the rough provisional diagnosis of obscure bodily disease, accompanied by unusual forms of delirium. Our clinical experience would have led us to refer certain secondary affections of the brain to certain definite morbid conditions of the general system or of special organs. Our minds would have reverted to the euphoria of phthisis, the depression of gout, the delirium of fever, the coma of Bright's disease, and the excitement following on the administration of certain poisons. It appears to me, therefore, extremely likely that the mental symptoms would not bulk very largely in our eye, that we would commence the study of this new congeries of symptoms by careful investigation into the bodily condition of the patients, and would not begin by attempting to analyse the mental symptoms: we would regard them as mere incidents in the case, exactly as we had been in the habit of regarding muttering, noisy, or joyous delirium, which we had observed as a secondary consequence of various diseases. After careful examination of all the systems, we would be forced, by a process of exclusion, to adopt the rough provisional diagnosis of disease of the brain accompanied by mental symptoms,—a very different diagnosis, I submit, from that of mental disease. In what part of the organ would we localize disease? It is needless here to narrate our reasons, founded on physiology, for believing that the frontal and superior convolutions form the substrata through which psychical action is manifested; or those based on pathology for our belief that implications of these gyri are followed by abnormal exercise of function. Suffice it to say, that all our teaching would lead us to localize the presumed disease in that region. Turning to the history of the cases, the only assignable reason for the existence of bodily and mental symptoms is found to be prolonged painful emotion. This, although it might suggest itself as a cause of melancholy, could not, to men brought up in the atmosphere of physiology and pathology, afford any sufficient reason for the systemic degradations. We would, therefore, I submit, push our inquiries as to the manner in which the cause, emotion, could so act on the frontal and superior gyri of the brain as to produce morbid modifications of the general trophesis, and of the mental functions in the direction of exaltation and depression.

At this point I will abandon the parable for a time, in the hope that I shall be able to resume it after having laid before you certain facts and theories bearing on the general proposition that insanity is the result of well-defined morbid processes, and that it is but one of a group of symptoms in a given case, the relative value of which, from a pathological and therapeutic point of view, has to be carefully weighed.

Although we have too often to acknowledge that our knowledge of the Institutes of Medicine is far from perfect, and have to recognise it in terms by speaking of "functional" diseases in connexion with morbid symptoms which we have not as yet been able to refer definitely to actual structural changes, still science is gradually narrowing the area of ignorance, and we are able year by year to base diagnosis and treatment more fully and more firmly on a definite knowledge of the normal and morbid anatomy and physiology of involved organs. This platitude is specially applicable to the heart, lungs, and kidneys, the treatment of the diseases of which organs has very materially advanced in consequence of direct scientific investigation. It is not much more than thirty years since similar methods of research were applied to the brain, and already their effects in the treatment of many cerebral diseases have been practically demonstrated, and are so well known to all present that they need not be further alluded to. But I ask you whether, as regards the insanities, theory founded on this new knowledge has been pushed far enough to seriously influence treatment, and whether the relations one to the other of the various organs which compose the substance of the brain have been seriously studied with the view of considering in what manner, and to what extent, implications of one or more of them may react on the functional activity of the organ. I take the liberty of believing that the practitioner of medicine is not so intimately acquainted with the minute anatomy of a convolution as he is with that of the kidney or liver, and that he is therefore not able to visualise the probable changes which may occur in a gyrus during the action of disease. I believe that every thinking man, in the presence of disease, projects a scheme of the departures from healthy structure on a mental screen—whether rightly or wrongly does not affect my position; he visualises (as Galton calls it) the altered condition of matters; he sees the gross lesions and the microscopic details of the changes in the various structures of the organ, and the picture influences him in the future conduct of the case. This simply means that he brings his anatomical, physiological, and pathological learning to bear on an individual instance, and in so doing he forms a conception of the nature of the implication of the apparatus. But I again take the liberty of asking—Is a brain convolution often regarded as an apparatus, and is the same kind of conception arrived at in respect of the possible and probable change which may take place in it in consequence of the action of morbific influences? Is the normal structure before the mind's eye as it is in the case of, let us say, the kidney? Believing that it is not so, I shall attempt to diagrammatise a convolution as an organ. To those who are acquainted with the subject I must apologise; but as I long experienced difficulty in realising to myself the relations of the various structures one to the other, I venture to think that the same may have been felt by others.

The main obstacle to forming a mental diagram of the structure of a convolution is that, although text-books give, with one important exception, accurate descriptions of the individual elements, they fail to bring them together so as to enable the student to appreciate the lymphatics, the bloodvessels, the fibres, the endothelium, and the connective tissues, and accordingly he is not able to grasp at once the idea of the possible results of morbid changes occurring in one or more of these structures.

In speaking of the arrangement of the cortical cells I follow the description of Ramon y Cajal, which, being apparently accepted by Retzius, may be considered to be the latest authoritative statement. So far as the cells are concerned, the diagram you hold in your hands is founded on the figures given by these two investigators. In describing a typical Rolandic convolution, Cajal speaks of four layers of cells, the two inner layers, which have been generally accepted as separate, being merged in one. The letters S. Z., Z. S. P., Z. L. P., and Z. P. C. apply to the superficial zone, the zone of small pyramids, the zone of large pyramids, and the zone of polymorphous cells. Till lately the superficial layer was believed to contain only a few small fusiform cells surrounded by numerous nuclei of neuroglia. But Cajal has demonstrated, by a modification of Golgi's process, the presence of other cells peculiar in character. He describes as existing in this zone cells of four types,—polygonal, fusiform, triangular, and unipolar. The polygonal cells are the least numerous, and their poles branch in various directions; the fusiform, also not numerous, the long axis of which lies parallel to the plane of the surface, give off an apical and a basal process, which does not arise directly from the body of the cell, but from the protoplasmic expansions; these poles run horizontally or slightly diagonally for great distances, never descend into the inferior layers, and give off collaterals (certain of which tend towards the surface) which form an exceedingly rich plexus of terminals; in some cases the axis-cylinder process breaks up into two or three branches, and gives off collaterals; the more numerous pyramidal cells give off two or more axis-cylinder processes which mostly run to the surface.

The second zone, that of small pyramids, sends its apical processes to terminate in "splendid tufts" in the meshwork of the superficial layer, thus constituting a very thick protoplasmic plexus. Before doing so it sends off numerous collaterals, as is also the case with the axis-cylinder process, which, as in the case of the cells of the outer layer, divides into two twigs. The lateral expansions are numerous, extend for long distances, and end without anastomosing in similar expansions of other cells. The plexus so formed corresponds to the broad stripe of Baillarger.

The cells of the layer of large pyramids resemble the small pyramids, only differing in size and in the greater thickness of their apical and axis-cylinder poles. These "giant cells" of Betz occur principally near the vertex; as we examine forwards or backwards they fall off in size and number, and are not seen in the occipital lobe. The plexus formed by the collaterals of their axis-cylinder processes corresponds to the thin stripe of Baillarger.

The chief characteristic of the layer of polygonal cells (which are described as egg-shaped, spindle-shaped, triangular or polygonal) is that the apical process never reaches the superficial zone. The axis-cylinder process in descending gives off three or four collaterals, which again ramify, and unites itself, either by bending or by a ⊥-shaped division, with one or two nerve-fibres of the white substance.

Golgi describes, further, as mingled in small numbers in the second, third, and fourth layers, but especially in the fourth, certain "cells of short axis-cylinder" which terminate in ramifications through the thickness of the grey substance, and (according to Cajal) enclose the bodies of neighbouring cells. In the same situation, and also sparsely scattered, Marinotti describes spindle-shaped cells which send processes mostly to the superficial layer, and (according to Cajal) occasionally to the zone of small pyramids. Golgi figures solitary cells occurring in all the layers, but especially in the fourth, the protoplasmic processes of which do not reach the surface, and whose axis-cylinder descends for a short distance.

It would be exceedingly interesting to follow out Cajal's views and hypotheses as to the functions of different cells, of the method of their association, and as to the relations of the axis-cylinders of the various layers and those of their collaterals with the projection, association, and commissural systems of fibres in the white matter. At present it is only necessary to say that he holds the projection fibres to be in direct communication with the cells of the pyramidal layers, giving off numerous collaterals running to the corpus striatum, where, by very delicate ramifications, they are connected with its cells. The origin of the callosal fibres is doubtful, according to Cajal; some may arise directly from axis-cylinders, others from bifurcating axis-cylinders of pyramidal cells. In a future lecture we will have to consider the connexion of cell with cell, and convolution with convolution.

At present it is only necessary to allude to a fourth system of fibres, which he figures and describes. I quote his own words:—"In addition to the projection, commissural, and association systems, there are other and much thicker fibres, proceeding possibly from the medulla or cerebellum, which, passing usually in an oblique or horizontal direction through the thickness of the grey matter, form ramifications of enormous extent throughout its whole substance, the superficial zone included. The terminal branches form varicose arborisations which appear to enclose preferentially the small pyramids. Is it possible that such fibres represent the cerebral termination of sensory nerves, intermixed with the terminal branches of other nerves." This system he speaks of as centripetal or terminal fibres (*c. f.* in Diagram). It will be necessary to revert later on to this subject and to Cajal's observations and hypotheses; but, in the meantime, I only desire to draw your attention to the fact of the immensely intricate meshwork of cell and nerve terminals in the outer surface of the grey matter of the convolutions.

The body of the cell is encapsulated by a projection of the hyaline sheath of its nutrient capillary (*p. v. s.*), the perivascular space so formed being the commencement of the lymph-path which leads from the cell to the main lymphatics of the head and neck. The brain has no true lymphatics, and is dependent on the perivascular system for the removal of effete and superfluous material. As much of what I have to say in future lectures depends on the thorough understanding of the cerebral lymphatic system, it will be well to state it definitely here.

If we make a transverse section through the head of a small animal, sufficiently thin to be observed by a low power, the arrangement of the membranes is seen to be as follows:—1 (see

Diagram), the dura (*D. M.*), a thick membrane consisting of two layers, and containing arteries, veins, and lymphatics; 2, a fine membrane, extending over the sulci (*A. P.*), but intimately connected with, 3, a delicate membrane which invests the grey matter of the convolutions, and is traceable to the bottom of the sulci (*V. P.*). Between these two membranes, which are held together by numerous trabeculæ, is the pial space (*p. s.*) in which blood-vessels ramify in large numbers. It is, in fact, a highly vascular double membrane. The chief reason why the lymphatic system of the brain and spinal cord is not generally understood consists in the traditional error, to be found in most text-books, of describing an arachnoid membrane apart from the two layers just described, and the relations of which are demonstrated in the specimen submitted to you. In the last edition of Quain's *Anatomy* an arachnoid is fully described, and the pia is stated to be a highly vascular membrane which "dips into all the sulci, most of which thus contain a double layer."[1] This is directly contrary to fact: the visceral layer of the pia is in apposition to the grey matter, and dips into all the sulci; the parietal layer bridges the gyri, and between them the vessels are distributed. No membrane exists between the parietal pia and the dura; there is a space lined on both surfaces by endothelium, the subdural space (*s. d. s.*) It would tend to obviate error were the term "arachnoid" entirely dispensed with, and were all to speak of the visceral and parietal layers of the pia as we do of those of the pleura; but, as a compromise, certain authors employ the term arachno-pia and true or visceral pia, which terms may be accepted on the understanding that no membrane exists between the arachno-pia and the dura. By the arachno-pia bridging the sulci and the great fissures (such as the sylvian, Rolandic, and intraparietal), cisterns are formed between it and the true pia, and at the base large reservoirs are produced by the arachno-pia bridging the space between the cerebellum and the medulla, between the pons and the medulla, and between the various eminences of the cerebrum. The largest, the *cisterna cerebello-medullaris*, is continuous with the lymph spaces of the spinal cord, which find vent through all the foramina of the spinal column. In addition, as shown by Key and Retzius, the dura and the arachno-pia send prolongations around each vessel or nerve entering or leaving the skull.[2] All these lymph paths are connected with the extra-skeletal lymph system. Another and important method of communication is afforded by the Pacchionian villi, which extend from the arachno-pia through the subdural space, and are in close relationship to the superior longitudinal sinus and the veins of the dura.

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[1] Quain's *Anatomy*, vol. iii., Part 2, p. 184.

[2] Except the optic and auditory nerves, the lymph currents of which run backwards.

Returning to the surface of the convolutions, all its blood-supply is derived from the pial arteries, which on the summits are given off directly, and in the sulci form large descending branches. Each vessel carries with it a prolongation of the pia, which surrounds the vessel to its ultimate branches. This is often spoken of as the adventitia of the vessel. From this pial or hyaline sheath (*h. s.*) processes are given off which encapsulate the cells, each of which is thus surrounded by a perivascular capsule (*p. v. c.*). All these lymphatic paths can be injected from the arachno-pial space in the cord. Mr Miles has kindly supplied me with specimens illustrating this fact ; he has succeeded in injecting all the cavities of the brain from the cord, all the cisterns and the perivascular canals of the grey matter of the convolutions ; his specimens also show the ease with which the subdural can be injected from the arachno-pial space, passing through the Pacchionian villi, which transmit the coloured material to the dura itself. Further evidence of the easy communication between the head and the cord is obtained by opening the spine of a fœtus and pressing and releasing the elastic skull. The cerebro-spinal fluid ebbs and flows with great readiness.[1]

There are reasons for believing that the pericellular capsules are not the actual extremities of the drainage system. Bevan Lewis regards the large connective tissue spider-shaped cells, first described by Deiters, and therefore called after him, as forming the distal extension of the lymphatic system, or, as he otherwise calls it, the lymph-connective system permeating the neuroglia. Lewis holds that the thick process of these cells terminates in the perivascular or hyaline sheath, and that the finely reticulated processes permeate the neuroglia.

Lewis's opinions have been fully confirmed by Lloyd Andriezen, whose further observations on the character of the neuroglia elements are most important. He divides them into *protoplasmic* and *fibre* elements. The former (*p. g. c.*) are of mesoblastic origin, occur almost entirely in the cortex, possess a distinct cell body, are stellate or dendritic in the arrangement of their processes, which are stout, coarse, and shaggy in outline ; they are connected by one or two of the coarser processes with the hyaline sheath of vessels, and are surrounded by lymph spaces which are in direct communication with the perivascular lymphatic. A smaller variety surrounds the bodies of the greater nerve-cells (pericellular elements). Andriezen believes that they exercise a

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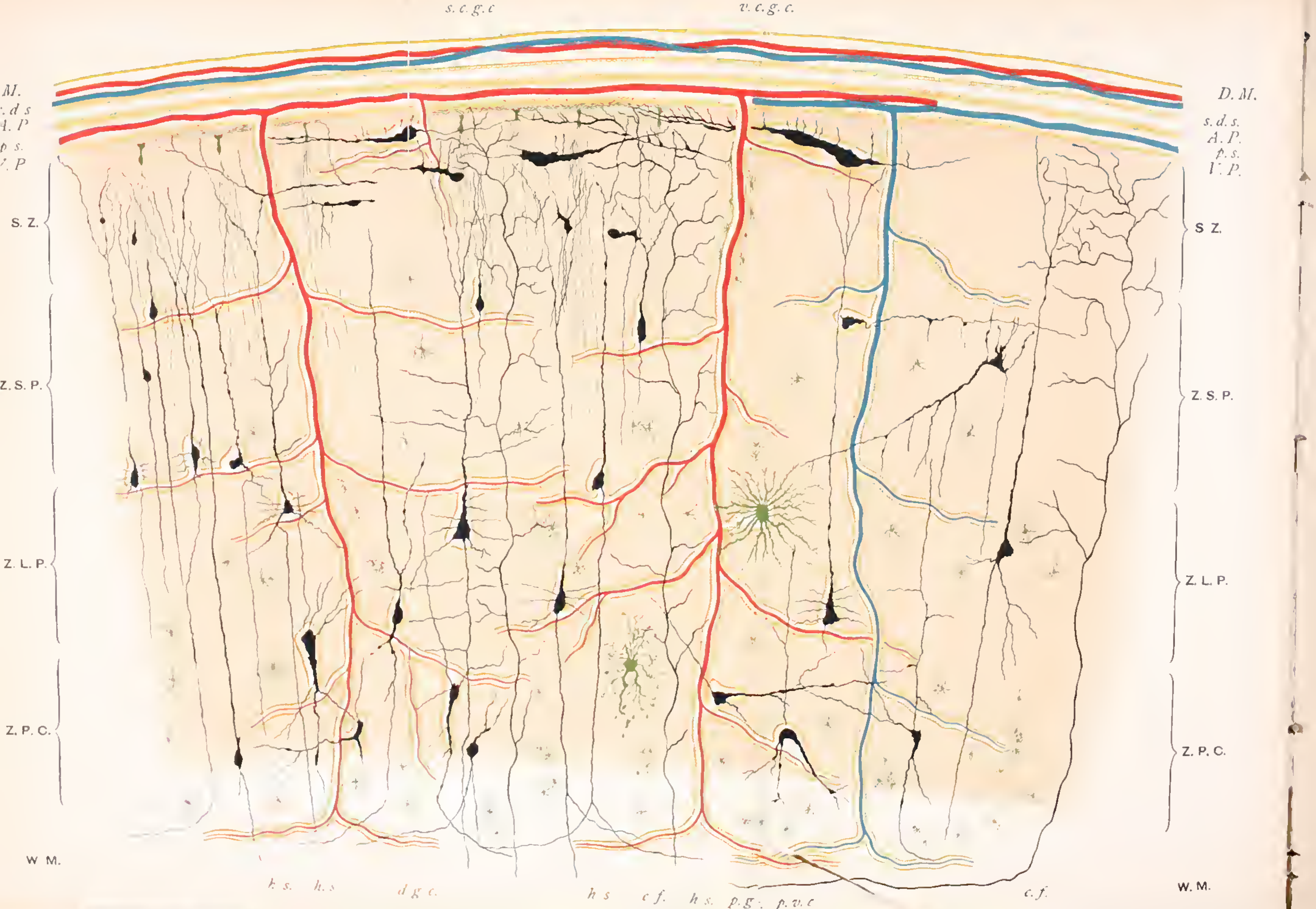
[1] His describes an epicerebral lymph space as existing between the visceral pia and the surface of the convolution, and extending inwards along the vessels between the hyaline sheath and the brain substance. I have never been able to demonstrate this space in healthy subjects ; and it is difficult to understand where the contained lymph could find vent. The only means of reaching the lymphatic system would be by stomata in the visceral pia and hyaline membrane, which have not been demonstrated. The probability is that any such space, when it is found, is artificially produced by the accumulation of morbid fluids. In this space we never find *débris*, as we do in the lumen of the true lymphatic.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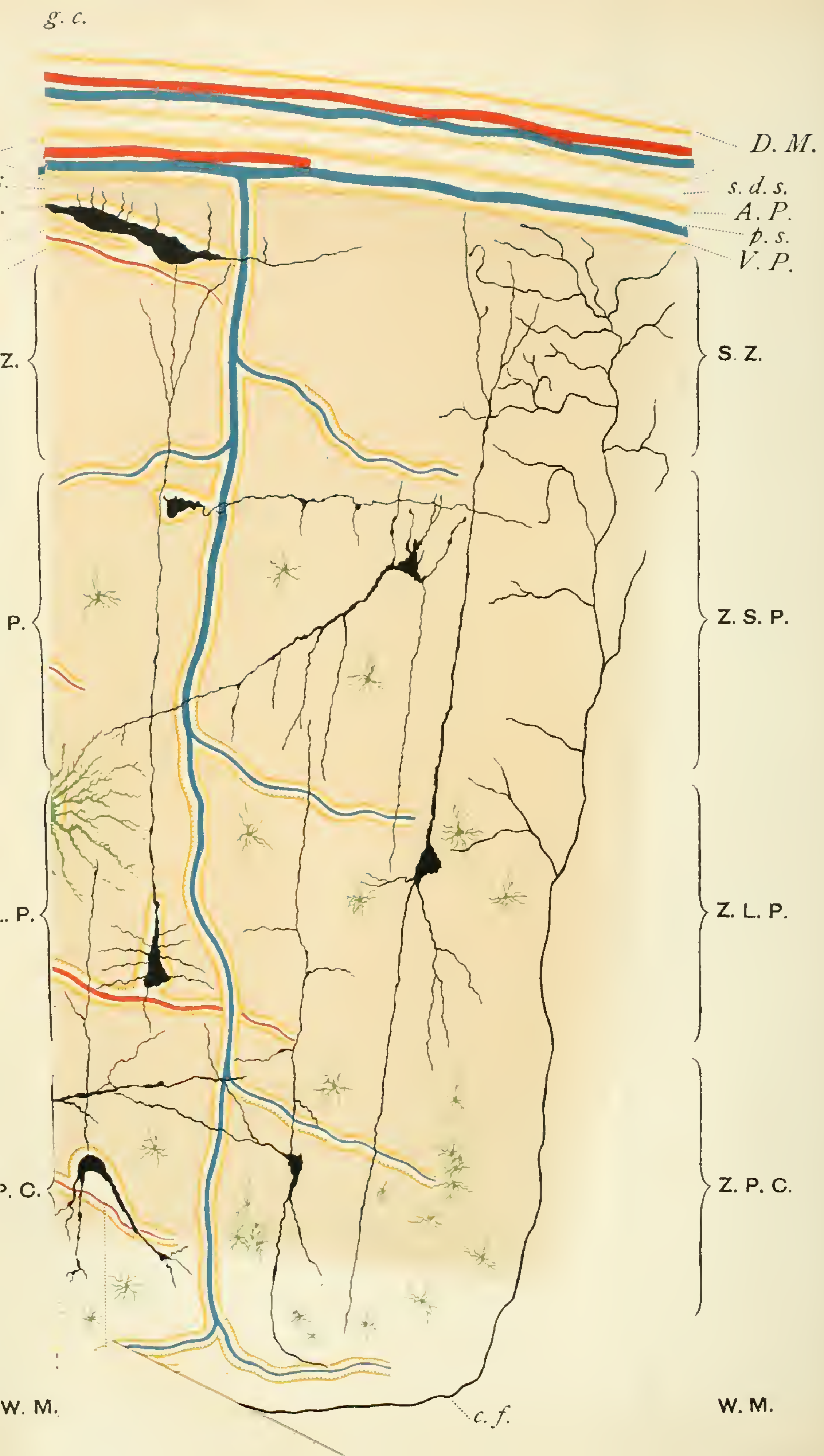
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lymphatic function.[1] The fibre elements are of epiblastic origin, and their function is purely sustentacular. Their body is small, and their processes long, fine, and delicate. They form—(1), a *diffuse network* throughout the cortex and white matter (*d. g. c.*); and (2), two *condensation systems*,—the first, on the surface, constituting "a felt-work of tangential fibres interlacing with one another," and sending downwards through half the thickness of the cortex a series of fine fibrils (*s. c. g. c.*); the second surround the vessels, especially in the deeper layers of the cortex and the medullary substance; they are entirely imbedded in the brain substance, and have no anatomical continuity with the hyaline membrane (*v. c. g. c.*). This perivascular condensation is stated to be so great as to practically form a fourth sustaining envelope—a "felted sheath."[2]

This is a rough description of the elements of a convolution, which are fairly represented in the Diagram individually. I now ask you to multiply the items by tens or twenties as regards the vessels, by hundreds as regards the nerve-cells, their processes, and the nuclei of neuroglia; in the superficial zones, and in those of the small and large pyramids, to extend to the right and left an intricate meshwork of processes; and throughout all to construct the most delicate fibrillar meshwork proceeding from the nuclei of neuroglia; to prolong the axis cylinders downwards to the white matter, making some turn inwards to the corpus callosum, others to the right or left to the association system, and others to run directly downwards to the projection expansion. Finally, carry upwards from the *corona radiata* certain thick fibres to terminate on the superficial zone without passing through any cell substance. By so doing you may gain a conception, not merely of the complexity of the organ, but of what is of major importance, a conception of the definiteness of its anatomy, any modification of which must be followed by modification of function.

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[1] *British Medical Journal*, 29th July 1893.

[2] *Internationale Monatsschrift f. Anat. u. Phys.*, 1893, Bd. x., Heft 11.

DIAGRAMMATIC SCHEME OF THE CONSTITUENTS OF A CONVOLUTION.

As regards the cells, fibres, and neuroglia, this diagram is founded on plates by Retzius, Cajal, and Andriezen.

The arrangement of the vessels is purely diagrammatic.

Endothelium is indicated by dotted yellow lines. Lymphatic spaces and channels are left white.

D. M., Dura mater; *s. d. s.*, Sub-dural space; *A. P.*, Arachno-pia; *p. s.*, Pial space; *V. P.*, Visceral pia; **S. Z.**, Superficial zone; **Z. S. P.**, Zone of small pyramids; **Z. L. P.**, Zone of large pyramids; **Z. P. C.**, Zone of polymorphous cells; **W. M.**, White matter; *h. s.*, Hyaline sheath; *p. g. c.*, Protoplasmic glia cells; *s. c. g. c.*, Superficial condensation of glia fibre cells; *v. c. g. c.*, Vascular condensation of glia fibre cells.

(*To be continued.*)

II.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 595.)

APHASIA AND OTHER DISTURBANCES OF SPEECH IN RELATION TO EVANESCENT ORGANIC AFFECTIONS AND FUNCTIONAL DISORDERS OF THE CEREBRAL CORTEX.

IT has often been argued that there can be no such thing as a purely functional affection; because function and structure go together, and there can be no change in the one without corresponding change in the other. But, though we grant the essential soundness of this position, and admit the fact that an advancing pathology is constantly subtracting from the list of functional affections and adding to that of structural diseases, we yet know how convenient, practically, is the distinction between functional disorders and organic diseases. I think it will be well to have regard to the distinction in treating of speech, in the relations to be discussed in the present paper.

In this paper, I propose to treat of speech in its relations to Functional Disorders of the cerebral cortex. But I wish it to be understood that I mean to use the term "functional" in the usual loose way, so as to include under it various affections which a strict pathology would, no doubt, relegate to the category of organic diseases.

In recognition of the fact that we cannot draw any strict line of demarcation between organic diseases and functional disorders, I shall begin by making brief notes of the relations of speech to certain affections which are confessedly organic in nature,—though they are related to functional disorders in their evanescence and curability.

But I should like first to direct attention to one or two of the general characteristics presented by aphasia due to evanescent organic affections, or to functional disorders, of the cerebral cortex.

In most of the conditions to be reviewed in this paper, the fundamental cause of the aphasia is not a destruction of one or more of the speech-centres, but a general enfeeblement of cerebral energy, betraying itself, in a special way, in connexion with the delicate function of speech. This being so, we cannot expect to meet often with solitary disablement of one of the speech-centres and functional integrity of the others. The centres A and B, which are so closely related to each other in function, seem for the most part, in the cases now to be considered, to be enfeebled together; and as it is this enfeeblement, rather than disablement, that we have to do with, the symptoms presented to us are much more frequently those of failure in *production* of speech than those of failure in its reception and interpretation. In other words, Amnesia Verbalis (Logamnesia) is much more frequent than the failures in the power of recognising words (Logagnosia) which we term word-deafness and word-blindness. I think, indeed, that the very existence of word-deafness or word-blindness, in any case, should suggest an organic rather than a functional cause; because the word-images must be seriously disabled, and not merely enfeebled, if they cannot be revived by the strong stimulus from without which they normally derive from the hearing and seeing of words. In mere enfeeblement of function, the images often continue to respond to this strong stimulus from without, when the weaker stimulus from within that is produced by thoughts seeking expression in words fails to revive them. And thus it is that in the vast majority of cases of functional aphasia the symptoms are those of Logamnesia, and not those of Logagnosia. The aphasia is amnesic, and very seldom also agnostic.

Beginning, then, with evanescent organic affections of the cerebral cortex, let us now consider briefly the relations of speech to such affections; and afterwards consider also its relations to the more important of the functional disorders of the cerebral cortex.

Evanescent Organic Affections.

I think it will sufficiently fulfil the purposes of this paper if we select from among such affections—(1) conditions of evanescent inflammation; (2) conditions of compression and of concussion; and (3) conditions of congestion.

1. CONDITIONS OF EVANESCENT INFLAMMATION.—The brain is so delicate in texture that it can but seldom be attacked by inflammation without suffering either total destruction of texture at the part inflamed, or at least a degree of textural damage that leaves behind, permanently, more or less change. When the inflammation affects the centres for speech, aphasia, in one or other of its varieties, is, of course, developed. Sometimes it is a meningitis over the speech-centres that causes the aphasia, by spread of inflammatory action from the membranes to the subjacent cortex; sometimes it is a cerebritis, affecting the brain-substance primarily.

I need not say in what a large proportion of cases death results when there is acute inflammation of the brain, or of its membranes. But some cases do recover; and in a very few the inflammatory action is so evanescent as apparently to cause no permanent damage to brain-tissue. I shall now make a short note of such a case of complete recovery, after a cerebritis which had produced complete paralysis of the right side of the body, and also aphasia. I think the case is worth making a note of even independently of its bearings on speech; because it seems to me to be a good example of a condition which ought, I think, to be more familiarly known than it is at present. I mean the condition of acute cerebritis in one hemisphere, causing hemiplegia, and often leaving behind it, when recovered from, mental enfeeblement, or Jacksonian epilepsy, or both of these together. This condition is generally recognised to be pretty common in children,[1] but I do not think it is generally known to occur also, and not very rarely, in adolescents. During the last two years, I have myself had under treatment three cases of it in adolescents,—a girl[2] and a youth, both aged 18, and the girl, aged 15, whose case I am now going to make a note of. In the two former, the acute illness resulted in permanent left hemiplegia; in the latter, as we shall see, there was for a time right hemiplegia and aphasia, but ultimately complete recovery.

CASE I. (Personal Observation.) *Case of Evanescent Hemiplegia and Aphasia, due to Unilateral Cerebritis.*—M. R., æt. 15, a girl who had been employed as a clerk in the Register Office, and, more recently, as an assistant in a drysalter's shop. Admitted to Ward 33 on April 14, 1891.

History.—Had been falling off in health for a year; her chief complaints being headache, failure of eyesight, lassitude, want of appetite, polyuria, and frequent sensations of chilliness. Had sought advice about her eyesight at the Eye Department of the Royal Infirmary, and been told the failure of eyesight was due to the condition of her general health. For eight days before her admission, had been unable to go out to her daily work. For three of these days, had remained indoors at her lodgings, dull and listless; and then, on the 9th of April, five days before her admission, had gone home by train to her mother's house, which was situated in the outskirts of the city. Had vomited in the morning, before starting on her journey. When in the train, she fainted; but was kindly taken home by two strangers who were travelling in the same carriage with her. When she arrived at her mother's house, she was extremely weak and listless, and spoke very little; but she was not paralysed. Next day, however, when she was being lifted out of bed, she fell towards the right side; and it was then noticed that there was very little power of movement in her right leg. Later in the day, loss of power was also noticed in the right arm; and in the evening she had become almost speechless, so that, in trying to speak spontaneously, or in answer to questions, she could only say "Aye." Three days afterwards she was sent to the Royal Infirmary.

State on Admission.—There was total paralysis of the right arm and leg, and also very marked paralysis of the lower half of the right side of the face. For the first three days the temperature was 102°·5 F.; and, so long as the fever lasted, the patient was very dull and listless, passing all evacuations involuntarily. She was very drowsy, and slept a great deal. On being roused and spoken to, she seemed generally to understand what was said to her; but she sometimes failed to do so, putting out her tongue, for example, when asked to close her eyes. Once, when shown a written request to put out her tongue, she interpreted it correctly, and obeyed. The power of producing speech was almost annihilated; speech being reduced to the recurring utterance "Aye," which she emitted on every attempt to speak. There was a slight trace of haziness in the middle of the right cornea.

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[1] The best description of this hemiplegia of children that I know of is that given by Henoch in his *Lectures on Children's Diseases.* See Dr John Thomson's translation, *New Syd. Society*, 1889, vol. i. p. 290.

[2] In this girl's case, the cerebritis was distinctly a sequela of an attack of influenza; but there was no evidence to show that influenza had anything to do with the causation of the other two cases.

On the day after that of her admission, her head was shaved, and a blister of considerable size was put over the motor region of the left hemisphere. She was also ordered a mixture containing iodide and bromide of potassium.

On the fourth day after admission, the temperature fell rapidly, and became normal. Afterwards, it remained normal; except during two or three periods of a day or two, when there was a slight rise. After the fall of temperature, rapid inprovement set in both in motor- and in speech-power. On the sixth day after admission, she was able to say "No," and "Nurse." On the seventh day, she could move the paralysed arm and hand slightly; and also the leg slightly, at the hip and knee joints. On the eighth day, when asked when her brother was coming to see her, she said "on Saturday;" when asked how she was, she said "fine" and then "nice;" and when asked what day of the week it was, she said "Thursday," and then, correcting herself, "Wednesday." There was still, however, considerable amnesia of nouns, so that, on the ninth day, when a watch was shown her she could not remember the word "Watch," but said "to know the time." She told the time correctly from the watch. On the eleventh day, it was interesting to observe her searching in her memory for the word "Watch." She began by saying, "Yes, pa, no, um, no, ta, no;" and, finally, it was only after an evident effort that she got out the word "Watch." She also, on this day, named correctly a bunch of keys and a piece of india-rubber.

Although the full notes of the case, which have been taken with great care by the house-physician, Dr A. S. Duncan, are interesting, I cannot afford to give them here in detail. I shall further only make note of the fact that in the patient's expressions, when she was thus rapidly regaining her speech-memories, there were some curious examples of old associations of word-sounds,—old memories of sound-sequences. Thus, we were puzzled to know why she called a common pencil a "hair-pencil," and spoke of Nurse Terry as "Nurse Terra-cotta;" but she afterwards explained to us that, in the shop where she had formerly been employed, she had been in the habit of selling hair-pencils and terra-cotta paint.

In the course of her convalescence, there was a period of a few days during which she suffered from headache, dulness of mind, and slight delusions; but, with this exception, she progressed steadily; and she ultimately made a good recovery, her speech and writing becoming quite normal. Slight weakness in the arm and leg lingered for some months; and for some weeks there was slight movement, of the nature of athetosis, in the right hand; but, on the 5th of January 1892, it is noted that scarcely a trace of these symptoms remained; and they soon afterwards disappeared. Two or three months after this date, however, she had a recurrence of headache and dulness of mind; but after rest in the ward for a few days, and the application of a blister to the head as formerly, she was soon restored to good health and spirits.

I have thought this case worthy of record because the hemiplegia and aphasia seem to me to have been due to cerebritis of the left hemisphere. It was certainly not a case of hysterical hemiplegia; and the symptoms pointed, I think, rather to cerebritis than to meningitis. The case is interesting, as showing that complete recovery may take place after such a condition. The recovery of the speech-centres, after their probable involvement in the evanescent inflammation, is the point of special interest in connexion with our present subject.

2. CONDITIONS OF COMPRESSION AND OF CONCUSSION.—Temporary compression from extravasated blood is a much commoner cause of temporary aphasia than evanescent inflammation of the brain substance. We see it exemplified in many cases of apoplexy in the left hemisphere, and even in some in the right hemisphere. When, in such cases, the bulk of the extravasation is being diminished by absorption, the patient first recovers consciousness, but is still in many cases aphasic, until further absorption relieves the speech-centres from compression, and then speech is restored. Very often it is only the motor speech-centres that are compressed, because these lie closer than the sensory centres to the commonest seat of extravasation; but in some cases both motor and sensory centres are compressed; and in these it is worthy of note that, in the process of recovery, the difficulty of reception and interpretation is generally got over first, and the difficulty of production afterwards. This is no doubt generally due to the circumstance that, in most cases, the centre A is relieved from pressure before the centre B; but even if both centres were relieved simultaneously the power of interpretation would be restored before that of production, because the stimulus from without is a stronger reviver of word-images than the stimulus from within. The difficulty in production usually diminishes as the amnesia verbalis gradually disappears; but, even after disappearance of amnesia verbalis, there often lingers for a long time some thickness of speech (slurring). This is sometimes observable, and may be of long

duration, even when the seat of lesion is the right hemisphere. It may, apparently, be due to slight damage either of the motor centre or of the motor tract leading therefrom.

Of greater interest than these common cases of compression of the speech-centres from extravasation of blood in the substance of the brain, are the rarer cases, usually of traumatic origin, in which the speech-centres are compressed from without by an extravasation on the surface of the brain. In these cases, as in those of compression from within, the speech-centres are disabled more or less, in proportion to the amount of pressure; and when the pressure is taken off, by absorption of the extravasation, the recovery of speech is usually complete. Often, however, it is difficult to know how much of the temporary disablement has been due to compression by extravasated blood, and how much to the concussion inflicted on the brain by the injury. Here are two cases of this kind, each of which presents points of interest.

Case II. (Professor Gairdner, *Proc. of the Glasgow Phil. Soc.*, 1865–68, p. 102). *The case had been under the care of* Dr Pagan, *who communicated the following note of it to Professor Gairdner.*—"A youth, about 16 years of age, was admitted, under my care, to the surgical wards of the Infirmary, with well-marked symptoms of concussion of the brain. About two hours before admission, he had fallen upon his head on the deck of a vessel at the Broomielaw, from a considerable height, having missed his footing on the rigging. He remained in a state of complete insensibility for nearly forty-eight hours after admission, when he began to speak in a language which could not be interpreted, till he was visited by one of his shipmates, who told us it was Welsh. (It was a Welsh vessel, and the patient was a native of Wales.) He talked incessantly, and we were told that his words were not incoherent, but rather a narrative of past events—recollections, in short. He continued in this state for between two and three days, when he began to speak most unmistakable English, but every word nearly was an oath, and most horrible imprecations he uttered. During three or four days longer, he may be said to have *spoken* Welsh and *sworn* English. As consciousness gradually returned, he ceased to speak Welsh and to swear English; and when he recovered completely, after an illness of about twenty days, he spoke English and ceased to swear. There was no fracture of the skull, and but little external injury."

This is a good case, showing how the native language, being the most deeply engraved in the memory, was the least easily obliterated; and how in the acquired language, English, the words most easily revived were those that had been best imprinted,—probably by "frequency of repetition and emphasis of expression."

The second case of this kind, which I now proceed to make a note of, has other points of special interest.

Case III. (Professor Grashey, *Archiv für Psych.*, xvi., 1885, p. 654).—The patient was a brewer, aged 27. In November 1883, he sustained a fracture of the base of the skull, for which he was treated in hospital. When he recovered consciousness, it was found that there was almost complete deafness of the right ear, and almost complete blindness of the right eye, whose field of vision was at the same time extremely contracted. In the left eye, the field of vision was considerably contracted, and the visual acuity was lowered to two-thirds of the normal. There was slight motor paresis in the whole of the right side of the body.

As to speech, there was at first marked word-deafness, but this speedily passed off. There was marked and lasting amnesia of nouns, but no paraphasia. Apart from this amnesia of nouns, the patient had no difficulty in expressing himself; nor was there any difficulty in reading aloud from a book, or in repeating words spoken to him. In writing, his only difficulty was due to his amnesia of nouns.

The peculiar feature of the case has yet to be stated. It was a most remarkable *shortness of memory* for objects seen, and for words seen or heard. The sound-image of a word, or the visual-image of either a word or an object, could easily be revived from without, and its revival called up the corresponding idea or meaning in the normal way; but, as to visual images, immediately when the object or the word was withdrawn from the patient's sight its image vanished, and he forgot totally what object or word he had been looking at; and so also as to sound-images, he heard the word spoken to him and understood it, but immediately forgot it, and could not repeat it, even if only a very short interval was allowed to elapse before he was asked to do so.

Shown a knife, he knew what it was, and, if he could not recall the noun "knife," he said it was something for cutting with; but if the knife was then placed among other objects, and covered from his sight for a moment, he could not, when the collection of objects was again uncovered, tell which of them had been shown to him.

It was the same with the visual images of letters and words. Shown, for example, the letter G cut out in wood, he easily recognised it; but if it was then covered from his sight, and placed among other wooden letters, he immediately forgot what letter he had seen, and failed to pick it out from among the others, unless he kept repeating to himself "G, G, G," and thus artificially retained it in his memory.

And it was, again, the same with the sound-images of words. He could repeat or echo every word spoken to him, but the memory of it immediately vanished, if he did not retain it artificially by repeating it aloud over and over again.

Even more curiously was this evanescence of word-images exhibited, when the images were revived by the weaker stimulus from within. As already said, there was a good deal of amnesia of nouns. But it was an amnesia of a peculiar character. In ordinary logamnesia, the word is either, for the time, totally forgotten, or some of its details are forgotten (articulative amnesia). But this patient, though unable at once to name an object shown to him, could generally remember the initial letter of the name, and work out the rest of it after a peculiar method. His method was to repeat the sound of the first letter aloud, until it suggested that of the second, then to repeat the first two until he could add the third, and so on until he could pronounce the whole word. Shown, for example, a hand, and asked to name it, he said, "H, H, Ha, Ha, Hand, Hand." Sometimes he got the whole word more readily if he wrote down the letters one after the other, as their sounds occurred to his memory. In doing so, he would look at the object, and then write the first letter of its name; then look again at the object, and get the second letter; and so on, until the name was completed. If, in the course of this process, the object was withdrawn from his sight, further evolution of the name became impossible to him, as he forgot even what object he had been looking at.

Professor Grashey explains these phenomena by suggesting that the faculty of *retaining* the whole sequence of sound-memories that constitutes a word was, in this case, so enfeebled that, unless the initial letter-sound was constantly repeated, or its symbol at once written down, it vanished from the patient's memory before he could produce the other letter-sounds of the sequence. He concludes (p. 684), from the study of the case, that there is a form of aphasia due to "diminished duration of the sense-impressions," which he thinks "in all probability is not rare, and is most likely to occur in a pure form in patients who have become aphasic after concussion of the brain, or during an illness attended with fever." It cannot, however, be said that pure cases of this kind are common; since, so far as I am aware, this case remains unique in the literature of the subject. In ordinary cases of aphasia, instead of comparative ease in the revival of images, and premature vanishing of them after their revival, we much more frequently meet with that difficulty of reviving them from within which is indicated by the term logamnesia; and, in not a few cases of organic aphasia, that marked persistency of them when revived which is exhibited in recurring utterances in speech and recurring letters in writing.

I may add that this patient ultimately made a good recovery from the symptoms described; so that, on the 19th of January 1885, his condition as to remembrance of objects and words seen, and as to speech generally, was practically normal. I have made rather a full note of the case, as it has attracted much attention, especially in Germany.

3. CONDITIONS OF CONGESTION OF THE BRAIN.—In conclud-

ing these remarks upon disturbances of speech in relation to evanescent organic affections of the brain, I may here note that temporary aphasia has often been attributed, rightly or wrongly, to *congestion* of the brain. No doubt many of the cases have been produced by other causes, such as toxæmia; but there seems a good deal of ground for the belief that aphasic disturbance of speech may really be due to cerebral congestion. I have had a case in my own practice which lends support to this view. It occurred, a good many years ago, in the person of an old gentleman, of active mind and energetic habits, who for many years had been subject to occasional attacks of hæmaturia, especially after exposure to cold. It was exposure to cold which brought on the attack of aphasia to which I now wish to refer. He had got chilled, when standing in the street without a greatcoat, conversing with a friend, while a piercing east wind was blowing. Feeling himself become suddenly ill, he had taken a cab and driven home, but on arriving he was so weak on his legs that he had to be almost carried into his house. I saw him almost immediately; and, though I cannot now remember any details about his speech, I remember that, though he was conscious, he was almost speechless. I had him placed before a good fire, had his feet put into warm water, and had his limbs well rubbed; and in a few minutes his speech was restored. He was then put to bed, and rapidly recovered. I remember that the first urine he passed after the attack was like porter, from the quantity of blood in it. He lived for a number of years after this attack; dying eventually of aortic regurgitation, which, however, he was not suffering from at the time of the attack. His urine was always normal, except when he had one of these attacks of hæmaturia. The attack of aphasia and paraplegic paresis which I have just described was probably owing to the chill having produced, on this occasion, not merely congestion of the kidneys, as in his other attacks of hæmaturia, but also congestion of the brain and spinal cord.

Dr Ross (page 51) says,—"A transient attack of aphasia may also occur after a paroxysm of rage, or after a severe fright, shock, or sunstroke;" and he gives references to cases illustrating its occurrence in each of these conditions. It is difficult to know whether, in such cases, the aphasia is due to congestion of the brain, or to severe nervous disturbance; perhaps both may contribute to produce it.

Toxæmia.

I do not know of any poison which produces loss of speech, without loss of consciousness, as one of its constant and characteristic effects; but there are many poisons—some that can be introduced into the body from without, and others that, in conditions of disease, are formed within the body itself—which produce loss of speech occasionally or frequently. These are all poisons which act powerfully upon the brain, producing depression of function — as exemplified in mental stupor or unconsciousness, and in motor paresis or paralysis.

Among poisons that may be taken into the body from without, those belonging to the natural order Atropaceæ have the occasional effect of producing aphasia, perhaps more frequently than any others. Thus, excessive Tobacco-smoking has often caused temporary aphasia,[1] and so has a poisonous dose of Belladonna or of Stramonium. Among other poisons, the roots of Œnanthe crocata (which belongs to the hemlock order) have been known to have the same effect; so has Cannabis indica; and so, too, has Opium, which, like the rest, may produce amnesia verbalis, and, in one recorded case, has been known to produce paraphasia.[2] The well-known fact that Alcohol causes thickness of speech (slurring), I have already alluded to. It also causes dulling of the memory, and may produce amnesia of proper names, and even of the names of things.

Two other poisons of this class should be specially noted. I mean Snake-poison and Lead.

Dr William Ogle,[3] in 1868, wrote a very interesting paper on Snake-bite as a cause of loss of the power of speech. I shall not discuss the theory he offers in explanation of the phenomenon, but shall merely say that he conclusively shows that, in cases of snake-bite, loss of the power of articulate utterance often precedes loss of consciousness, and sometimes persists for days or weeks after all danger to life is past. It is worthy of remark, that in snake-bite the loss of the faculty of speech seems to be entirely on its productive side; since the patients whose cases are cited continued, while conscious, to understand what was said to them.

The other poison is Lead. It is in cases of chronic plumbism that temporary aphasia is apt to be exhibited: sometimes in association with other symptoms of severe "cephalopathia saturnina," such as epileptiform or apoplectiform seizures, paralysis, etc.; sometimes in association with the milder manifestations of plumbism, such as colic, etc. Many cases are on record that show the frequent association of temporary aphasia with chronic plumbism.[4]

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[1] G. Ballet (*Le Langage intérieur*, 1886; and see also Séglas, *op. cit.*, p. 88) has recorded the fact that he has sometimes produced temporary aphasia in himself by excessive tobacco-smoking. He forgot the names even of common objects, such as an umbrella; and, even when he could recall the visual image of the name, he could not pronounce the word until his mind had dwelt upon its visual image for some time.

[2] For references to cases showing the action of these various drugs in occasionally producing aphasia, and for a fuller discussion of the subject, I beg to refer the reader to Sir Frederic Bateman's work, p. 273 *et seq.*

[3] *St George's Hospital Reports*, vol. iii., 1868, p. 167.

[4] See, for example, Heymann (C.), "Ein fall von Aphasia saturnina," *Berl. Klin. Woch.*, 1865, p 195.

Among the conditions of toxæmia in which a poison has been formed *within the body itself*, the two most important, as occasional causes of temporary aphasia, are the uræmia of Bright's disease and the acetonæmia of diabetes. So important, indeed, are these two, that in every case in which there is a history of a temporary attack of aphasia the urine should be examined, both for albumen and for sugar. There are now numerous cases on record, both of uræmic and of diabetic aphasia. It is not a permanent symptom; but either passes off speedily, like a temporary attack of uræmic amblyopia, or forms but a prelude to more serious symptoms, such as uræmic or diabetic coma.[1]

I may here refer to an interesting case in which aphasia occurred as a passing symptom in the course of Diabetes Insipidus. It is a case recorded by M. Chouppe.[2] The patient, a man who had recently been in hospital, had been travelling on foot in search of work, without food, and with few opportunities of satisfying his great thirst, and had at length sunk down exhausted on the road, and fallen into a deep sleep or coma. On being roused, he was found to be quite aphasic; but he produced from his pocket a ticket from the hospital, with the name of his complaint, "*polyurie simple*," written upon it. This led the doctor to supply him freely with water, of which he immediately drank about two litres. In about ten minutes thereafter, he recovered his speech, and was able to give an account of himself. M. Chouppe attributes the aphasia to "cerebral deshydræmia."

The fact that aphasia may thus occur in diabetes insipidus, from simple dehydration of the blood, suggests the possibility that its occurrence in diabetes mellitus may also sometimes be due to this cause, and not always to acetonæmia.

In Gout, we have another condition of toxæmia, produced by excess of urate of soda in the blood, which sometimes causes temporary aphasia. It seems probable, however, that in some of the cases attributed to Gout there may have been a uræmic element, due to the existence of gouty disease of the kidneys.

Aphasia and other Troubles of Speech in Relation to Infectious Fevers.

It is not surprising to find that conditions of severe fever, which are so potent as causes of disturbance of the whole nervous system, are occasionally attended with special disturbance of the function of speech; the disturbance being sometimes of the nature of aphasia, and sometimes merely a difficulty or thickness in articulation.

The occurrence of aphasia in connexion with fever attracted attention from an early period in the historical literature of aphasia; Trousseau, for example, having recorded some characteristic cases of it.

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[1] See Bernard and Féré, "Des troubles nerveux chez les diabétiques," *Archiv. de Neurologie*, tome iv., 1882, p. 340.

[2] *Comptes Rend. de la Soc. de Biologie*, 1892, p. 642.

It is, however, to Albrecht Clarus that we owe the first special treatise on the subject. This was published in 1874,[1] as part of an able monograph on Aphasia in Children. Others have written well on the subject since that date, as, for example, Richard Kühn,[2] and J. R. Longuet.[3]

Of all the fevers, typhoid seems, on the whole, the one most apt to cause aphasic disturbance of speech; but the symptom has also been met with, occasionally, in connexion with other fevers, such as typhus, small-pox, measles, intermittent fever, yellow fever, etc. In the papers I have referred to, numerous cases will be found recorded; but it may perhaps be sufficient if, instead of quoting any of them, I only try to make a brief statement of the general conclusions which have been arrived at from the study of these cases by Clarus and the other authorities.

In the first place, it is clearly established that aphasia occurring as a complication of typhoid or some other fever may be either of functional or of organic origin.

The Functional cases, which are greatly the more numerous, are those in which the aphasia exists temporarily, as a nervous symptom of the fever. "It appears usually," says Clarus, "in the later period of a severe case, after other severe nervous symptoms." This functional form is not accompanied by hemiplegia. It occurs much more frequently in children than in adults, and seems commoner in boys than in girls. It usually passes off in a few days. Occasionally it is prolonged for weeks, during the patient's convalescence from the fever; but in such cases it is always, ultimately, completely recovered from. Its occurrence in the course of a fever should not be regarded as a symptom of very bad omen; since experience has shown that recovery is the rule, notwithstanding the development of this symptom. When death occurs, nothing material is found in the brain to account for the aphasia. Clarus thinks that the weakness of the heart and the anæmia of the brain may be the causes of it. Probably, however, the exhaustion of nerve-power, produced by the fever, should also be taken into account. The aphasia is essentially, and as a rule purely, amnesic; and in a few carefully observed cases it has been evident that the speech-memories least deeply imprinted have been the first to be wiped out. Take, for example, the following interesting note, which I extract from Sir Frederic Bateman's work (p. 188): "Dr Scandella, an Italian, who died at New York in

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[1] A. Clarus, "Uber Aphasie bei Kindern," *Jahrbuch für Kinderheilkunde*, 1874, p. 369.

[2] R. Kühn, "Ueber Transitorische Aphasie bei Typhus Abdominalis," *Deut. Archiv für Klin. Med.*, xxxiv., 1884, p. 56.

[3] J. R. Longuet, "De l'Aphasie transitoire de la fièvre Typhoide," *L'Union Méd.*, xxxvii., 1884, p. 717.

1789, was master of the Italian, French, and English languages; in the beginning of an attack of yellow fever, of which he died, he spoke English only; in the middle of his illness he spoke French only; but on the day of his death, he spoke only the language of his native country."

The cases of Organic Origin are of altogether different nature. Clarus attributes them, I think rightly, to embolism; whereas Kühn thinks they are probably due to hæmorrhagic extravasation. In this form, the aphasia is developed suddenly, *along with hemiplegia;* and, if the patient recovers from the fever, both the hemiplegia and the aphasia are apt to be permanent. It is worthy of remark that it is not so often at the height of the fever that this form occurs, as during the patient's convalescence,—when his heart is daily getting stronger. It seems probable, indeed, that the increasing strength of the heart's contractions leads to the detachment of a clot which has been formed in some recess of the left auricle or ventricle during the heart's period of weakness; and that this clot, swept into the middle cerebral artery, is the cause of the hemiplegia and aphasia. Many cases of this kind have been put upon record; one of the best of them being a case recorded by the late Dr Scoresby Jackson,[1] in which a young man, during convalescence from typhus fever, became suddenly hemiplegic and aphasic. I remember having, a good many years ago, when in charge of fever wards, a young man under my care who suddenly in this way developed, during his convalescence from typhoid fever, a left hemiplegia without aphasia. Had the hemiplegia been on the right side of the body, the patient would probably have been aphasic as well as hemiplegic.

Although Motor Aphasia is the type most commonly presented when embolism is the cause, it will be readily understood that any type may be presented, according to the centre or centres disabled by the cutting off of the blood-supply.

The cases of functional origin are, as we have seen, much commoner in children than in adults. But I do not think we can say the same of the cases of embolic origin. They are probably as common in adults as in children. They also, as has already been indicated, differ from the functional cases in being associated with hemiplegia, and in being developed more frequently during convalescence than at the height of the fever.

There is still a third form of speech-disturbance in connexion with fever, which deserves to be specially noted. It is a Dysarthria (difficulty of Articulation), a purely motor disturbance, not properly of aphasic nature.

Westphal is the authority who has paid most attention to these articulative defects in fever.[2] He describes particularly a slow

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[1] *Edin. Med. Journal*, 1867, vol. xii., part 2, p. 577.

[2] "Dysarthrische Störungen bei Pocken und Typhus," *Berliner Klin. Wochenschr.*, 1872, ix., No. 1, p. 8.

staccato utterance, like that of multiple sclerosis, as being not unfrequently met with in the course of small-pox. If the attention of physicians generally should be attracted to the effects of fever upon the power of articulation, it would probably, I think, be found that also other defects are common. Slurring, I anticipate, will be found to be the commonest of all; and I am inclined to believe that extreme slurring, so marked as to make the patient's speech unintelligible, or nearly so, will be found to be a symptom of grave significance,—probably much graver than the occurrence of an amnesic aphasia, inasmuch as it is so suggestive of prostration of motor power. I have myself met with one case of such extreme slurring in typhoid fever. The patient, a middle-aged woman, had by accident been admitted into my general ward, on the 9th of Jan. 1892; and was so prostrate that, when I saw her next day, I thought it well not to subject her to the strain of being removed to the fever hospital. She died on the second day after her admission. She had slurred more and more during the last eight days of her life; and when I saw her, her speech was almost totally inarticulate, though she was evidently quite conscious. I think this subject deserves more attention than it has yet received.

(*To be continued.*)

III.—ON CRIMINAL ANTHROPOLOGY.

By Sir Frederic Bateman, M.D., LL.D., F.R.C.P., Fellow and Laureate of the Academy of Medicine of Paris; Senior Physician to the Norfolk and Norwich Hospital.

The subject of this communication was suggested to me a few days ago, when, strolling into the Museum of the Norfolk and Norwich Hospital, my eye rested on the skeleton of the dwarf Stratford, who was hanged for murder seventy years ago. This skeleton was exhibited by Mr Jonathan Hutchinson at the Pathological Society in London, when he called attention to the physical deformities of this creature, especially to the arm and leg bones, which were short and thick, very strong, with the edges and prominences as marked as those of a powerful quadruped. Mr Hutchinson was inclined to regard the peculiarities of the skeleton of this dwarf as evidences of a tendency to retrogression of type. As I gazed on this miserable relic of humanity, I asked myself whether such an abortion was really a responsible being, and this thought naturally led me to direct my attention to the subject of Criminal Anthropology.

It would seem that the connexion between physical defects and crime is not altogether a theory of the last quarter of the 19th century, for, from a very remote period observers began to picture the organic peculiarities which separate the criminal from the average man; and the Draconian code demanded that persons should be hanged for any offence involving a sum of over 5s., as a preventive agency with regard to the perpetuation of imperfect types. Homer, in his account of the chiefs consulting about the capture of Troy, associates villany with gross physical defects in the person of Thersites. He described him as the ugliest man who came to Ilium. He was bandy-legged and lame in one foot, his shoulders were crooked, his head peaked at the top, and he was the vilest, most malicious little wretch in the whole Grecian army.

Pope has thus described this monster:—

> "His figure, such as might his soul proclaim,
> One eye was blinking, and one leg was lame,
> His mountain shoulders half his breast o'erspread,
> Thin hairs bestrewed his long misshapen head,
> Spleen to mankind his envious heart possest."

Carlyle, with his usual vigour of language, described his visit to a model prison, where he saw "miserable distorted blockheads, ape faces, angry dog faces, heavy sullen ox faces."

In Despine's work, "*Psychologie Naturelle*," leaving aside the study of the criminal's physical nature, he sought to make an exhaustive study of his mental nature, viewing him purely as a psychological anomaly rather than as an anatomical or organic failure.

The pathological aspects of criminality have had much attraction in Italy, which may be said to be the birthplace of Criminal Anthropology, as illustrated by the works of Lombroso, Enrico Ferri, Antonio Marro, and others. They study the criminal as a distinct type of humanity, presenting physiological as well as mental characteristics which separate him from ordinary men. The writings of Mr Havelock Ellis[1] have brought this subject into prominent notice in this country, and in accordance with the neological phraseology of the day, a new science has been created called Criminal Anthropology, which has attracted so much notice on the Continent that a journal has recently been established, "*Les Archives de l'Anthropologie Criminelle*," having for its object the dissemination of scientific information bearing upon the genesis of crime; the criminal being studied as a distinct type of humanity, presenting physical as well as mental characteristics which separate him from ordinary men. One contributor to this periodical, Enrico Ferri, a member of the Italian Parliament, asserts that all crime depends upon three kinds of factors,—anthropological, physical, or social.

The social factor (want, etc.) predominates in simple theft, and the anthropological factor in murder! The same writer discusses the relation between crime and thermometric variations. Another writer, also an Italian, Prof. Lombroso, seems to have established a new class of the genus homo, under the title of "Uomo delinquente." Lombroso regards this criminal as a reversion to the savage type, and he gives a detailed description of the physical characters of the habitual homicide, with "the cold glassy immobile look; the eyes somewhat bloodshot; the nose often aquiline or hooked; strong jaws, long ears, large cheek bones; hair crisp, abundant, and dark; the canine teeth prominent, thin lips, open nervous contractions of one side of the face, so as to give a grimacing or threatening look." The above is the description of a monster whom the French criminal anthropologist would characterize as being afflicted with "l'hystérie du sang." A German Professor, Krafft-Ebing, euphemistically describes it as "a criminal psychosis."

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[1] "The Study of the Criminal," *Journal of Mental Science*, January 1890. See also an able "Retrospect of Criminal Anthropology" in the same Journal for January 1893.

In one of his most recent communications,[1] Lombroso gives his views as to the physiognomy of criminals, lunatics, and anarchists, and professes to distinguish at sight between the useful revolutionist and the anarchist; and he says that "one of the most curious applications, and perhaps the most practical, of Criminal Anthropology, is that which flows from the study of the physiognomy of the political criminal, which seems to supply us with a method for distinguishing true revolution—always fruitful and useful—from utopia, from rebellion, which is always sterile." He then adds that for him it is an established fact, that "true revolutionists, that is to say, the initiators of great scientific and political revolutions, who excite and bring about a true progress in humanity, are almost always geniuses or saints, and have all a marvellous physiognomy."

These authors of what he calls salutary revolutions are characterized by a very large forehead, a very bushy beard, and very large and soft eyes, the jaw sometimes much developed, but never hypertrophic. This strange and dangerous doctrine he illustrates by reference to the noble physiognomies of Paoli, Mazzini, Garibaldi, and others. He further supports his theory by his study of 321 Italian revolutionists (against Austria), where the proportion of the criminal type was 0·57 per cent., *i.e.*, 2 per cent. less than in normal men. From these unfortunate enthusiasts, he passes on to the regicides and presidenticides, such as Fieschi, Guiteau, Nobiling, and to the monsters of the French Revolution of 1789, such as Carrier, Jourdan, and Marat, in nearly all of whom the criminal type was apparent, which is characterized by want of facial symmetry, cranial anomalies, enormous jaws, greatly developed frontal sinuses, protruding ears, etc. Amongst the Communards, he found this criminal type in 12 per cent.; and out of 41 Parisian Anarchists whom he studied with Bertillon of the Prefecture of Police in Paris, the proportion of the criminal type was 31 per cent.

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[1] "The Physiognomy of the Anarchists: Illustrative Studies in Criminal Anthropology," by Prof. Cesare Lombroso, *The Monist*, April 1891.

During the various scientific congresses lately held in Paris, at the period of the International Exhibition, was one on Criminal Anthropology, when M. Manouvrier read a paper in which he stated that the characteristics enumerated by Lombroso have in many instances been observed in men of spotless character, therefore they cannot be accepted as undeniable indication of criminal propensities. The presence of the metopic suture having been cited as an indication of criminality, M. Manouvrier examined in the Paris catacombs twenty-eight crania, and in five the suture existed; he considers, therefore, that the presence of this suture is not an anomaly, but only a peculiarity.

A further contribution has been made to Criminal Anthropology by Dr Gradenigo of Turin, who asserts that criminals show a marked preponderance over other persons in respect of deafness; he tested the hearing of 82 healthy male criminals, and he found more or less marked deficiency of hearing in 55 of that number (67·3 per cent.).

It may be said that, however interesting this subject may be from a medico-legal point of view, medical men can contribute but little to its elucidation. This would be true if the physical defects of the criminal were confined to external appearances — to anomalies in the physiognomy of the individual; but anatomical differences are said to exist between the criminal and the non-criminal class, and especially as regards the arrangement of the frontal convolutions of the brain.

Of late much has been written about cerebral anomalies and asymmetry, and an attempt has been made not only to establish a relation between these anomalies and aberrations of intelligence, but also between them and alteration of the moral sense—"la criminalité." Amongst those who have written upon this subject are Benedikt in Germany, and Hanot and Féré in France.

It has been stated that in malefactors there has been observed an unfolding or reduplication of the second frontal convolution; thus increasing the number of frontal convolutions from three to four, as occurs in carnivorous animals.

Benedikt observed this arrangement in a large number of brains of murderers; and Prof. Bouchard, of Bordeaux, informed the Anthropological Society of Paris that he had verified the existence of this supernumerary convolution in the brain of a young man who had recently been guillotined.

Benedikt asserts that if the brains of murderers do not present real anomalies, they at least exhibit more frequently than others abnormal, or, rather, unusual communications between the convolutions.

M. Féré, in writing upon this subject, observes that if the majority of malefactors present only insignificant anomalies, there exist, on the other hand, subjects that cannot be ranged in the criminal category, that offer most important malformations; and he illustrates these remarks by the history of a female not belonging to the criminal class, where the asymmetrical anomalies were most striking. He adds that it must be borne in mind, that there are scarcely two brains that resemble each other exactly; and, furthermore, that no brain is exactly symmetrical at any period of its development, and it would seem that asymmetry is not special to man, but is found in the monkey.

It will therefore be seen that there is a great divergence of opinion as to the existence of this fourth frontal convolution, and I recommend this subject to the consideration of the new sect of criminal anthropologists that has lately sprung up, by whom it will doubtless be deemed important from a medico-legal point of view; it is also a matter of interest to the medical profession generally, for although but a small number are connected with prisons, or have the opportunity of making the autopsy of murderers, yet many must at times have occasion, either in hospital or elsewhere, of making post-mortem examinations of persons who had been known to have led a bad and even criminal life, and the truth or otherwise of the presence of the fourth frontal convolution can be tested.

The criminal anthropologists seem to have invented a phraseology peculiar to themselves: persons who commit heinous crimes in cold blood are said to be affected with "psychical anæsthesia," a modification of which is spoken of as "psychical dysæsthesia;" or, in other words, if a person, by appropriating to himself your purse and its contents, shows that he does not understand the difference between *meum* and *tuum*, although in vulgar language he would be simply called a thief, the criminal anthropologists would say he was merely suffering from "psychical anæsthesia!"

The science of Criminal Anthropology is intimately connected with the criminal responsibility of insane persons in general, a question just now attracting considerable attention in America, the subject having been prominently brought to the front by a paper recently read at the Medico-Legal Society of New York by Mr Clark Bell,[1] in which he reviews and criticises the celebrated McNaghten case, which created so great a sensation in the year 1843, when the English judges were called upon by the House of Lords to formulate a law applicable to insanity in criminal cases, which has dominated English judicial thought since that time.

It will be remembered that McNaghten shot Mr Drummond, mistaking him for Sir Robert Peel, who, he thought, was plotting for and intending his destruction. The able author of the paper observes that there was no question at the trial of the right and wrong theory, as McNaghten well knew right from wrong, and yet he was dominated by, and acted wholly under, the influence of his insane delusion; he also knew the consequences of his act. The prisoner was acquitted on the ground of insanity, and a storm of indignation followed this verdict. Mad or not, it was said that the prisoner ought to have been hanged, and there was a general denunciation of mad doctors; and now, after the lapse of fifty years, this trial is again made the basis for inquiry as to how far the defence of insanity may be properly recognised in criminal cases.

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[1] *New York Medico-Legal Journal*, Dec. 1892.

I do not propose to enter upon the wide, delicate, and much-disputed question of the relation said to exist between mental disturbance and criminality, nor am I disposed to discuss the question as to whether there be any necessary connexion between the moral and intellectual sense and the gross morphology of the brain; but, as this subject has recently formed a leading feature at the meeting of the British Association at Edinburgh, I have simply wished to write a short sketch of the present position of the new science of Criminal Anthropology.

From these disjointed notes, I think I have shown upon what a slender basis of fact this new science exists. To say the least, if not true, it is a very dangerous doctrine; and, as society is at present constituted, it cannot afford to have a class of criminal automata, and to have every rascal pleading guilty grey matter in extenuation of some crime. At all events, I have thought the subject sufficiently important to bring under the notice of the readers of this Journal, especially at this juncture, when attention is so widely directed to the mysterious connexion between matter and mind. Unhappily, instead of solving the question, the study of Criminal Anthropology tends to shroud it as a still deeper mystery, and shows that the *vis vivida animæ* justifies the eloquent language of a recent writer when he says,—" Mind is indeed an enigma, the solution of which is apparently beyond the reach of this very mind—itself the problem, the demonstrator, the demonstration, and the demonstrand."

IV.—NOTE ON BIER'S NEW METHOD OF TREATING STRUMOUS DISEASES OF THE EXTREMITIES BY PASSIVE CONGESTION.

By A. G. Miller, F.R.C.S.E., Surgeon to the Edinburgh Royal Infirmary.

(*Read before the Medico-Chirurgical Society of Edinburgh, 6th December* 1893.)

Mr President and Gentlemen,—In presenting this note (I can hardly call it a report) of my clinical experience of Bier's congestion treatment of tubercular affections of the extremities, I hope (though I have nothing great to lay before the Society) to be able to show that the method is useful, and to induce other surgeons to give it a trial. It has already attracted some attention both in this country and on the Continent.

Before, however, saying any more, I must give a description of the method, for some may not be familiar with it. The procedure is very simple. It consists in placing a broad elastic band round the affected limb, a few inches above the diseased part, firm enough to produce venous congestion. Bier recommends that this congestion should be kept up continuously, and that the patients should be permitted and even encouraged to use the limb. The elastic band should be broad, and a layer of lint or wool should be placed under it to protect the skin. The point of application should also be changed every day or two to prevent abrasion. The distal portion of the limb is supported by a common roller up to the affected part, so that the congested area is limited to the immediate neighbourhood of the disease.

No other apparatus or treatment is employed by Bier in his cases. As an example of the method of application, take a case of disease of the elbow joint. The hand and forearm are bandaged, then the elastic is applied to the middle or lower third of the upper arm, firm enough to produce congestive discoloration of the neighbourhood of the elbow. Congestion is what is wanted, not œdema, still less anæmia. Pain is never caused, and if the compression be uncomfortable at first, the patient soon becomes accustomed to it.

An account of Bier's method is given by him in the *Centralblatt für Chirurgie*, 1892 (Beilage No. 32, p. 57).[1]

He records upwards of twenty cases that were treated in Prof. Esmarch's wards at Keil by this method, and reports that "in most of the cases the improvement attained was very rapid and striking, and in no case did a change for the worse occur."

Dr Bier, who is Prof. Esmarch's hospital assistant, says that the method is practically the same as that recommended by Helferich for comminuted fractures. I have been unable to find any reference to Helferich as an authority on this subject, but from my friend Mr C. W. Cathcart I have ascertained that the late Mr Thomas of Liverpool was in the habit of applying what he called the "damming" treatment along with "percussion" to fractures in which there was delayed union. The damming of the circulation in the neighbourhood of a fracture was managed very much in the way Bier has described, the main difference being that Mr Thomas kept up the congestion only for a few minutes.[2]

Also through the kindness of Mr Cathcart, I have ascertained from Mr Robert Jones of Liverpool, nephew of the late Mr Thomas, that Mr Thomas, some years ago, explained his "percussion and damming" method to a German professor called Helferich, who probably had mentioned it to Dr Bier, and perhaps the method of treatment had become associated with Helferich's name in Dr Bier's mind.

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[1] Dr Bier has also published a more extended account of his method under the following title, *Behandlung Chirurg. Tuberkulose der Gliedmaassen mit Stauungshyperämie*, von Dr A. Bier, 1893.

[2] Mr Thomas published his method of treating comminuted fracture in 1886.

Dr Bier in his paper says that the idea of applying the congestion method to strumous affections was suggested to him by the old belief that "a congested lung possesses an immunity against tuberculosis."

From an article on "The Association of Pulmonary Tuberculosis with Disease of the Heart," by Dr Percy Kidd, in *St Bartholomew's Hospital Reports* for 1887, I gather that this dogma is attributed to Rokitansky, who stated that "all cyanosis is incompatible with tuberculosis." Dr Kidd says that this opinion is supported by Laennec, Franke, Niemeyer, Fagge, and others, while it is opposed by Peacock, Pollock, and Lebert, who point out that phthisis is frequently associated with *congenital* heart disease. Dr Kidd himself records forty-one cases in which endocarditis, aneurism, mitral incompetence, and other heart affections were associated with phthisis. In all these cases the tuberculosis was chronic.

Dr Kidd, at the conclusion of the article, which seems to be of an exhaustive nature, says, "It is clear that Rokitansky's doctrine is too exclusive, but at the same time it expresses an important truth." He explains the association of phthisis with congenital heart disease thus: "Such persons are born with imperfect lungs; and it is not to be wondered at that these organs, which are inadequately supplied with bloodvessels, should be prone to so common a disease as tuberculosis."

Dr Kidd's conclusion is: "On the whole, it seems that Rokitansky's view is true, though in a more limited sense than he intended."

My attention was first attracted to Bier's congestion method by a letter which appeared in the *Lancet* of the 19th November 1892, from the pen of Mr Herbert Page of St Mary's Hospital, London, who had then just returned from Kiel, and who wrote in high praise of the results which he had seen in Prof. Esmarch's wards.[1]

I at once commenced to put the congestion method in practice, and had ample opportunity, for we have always a large number of strumous cases in the surgical wards of the Edinburgh Royal Infirmary.

The method which I employed at first for about three or four months was to put on the elastic compresser for only ten or twelve hours every alternate day,—that is to say, the bandage was put on in the morning and removed at night, and left off altogether for thirty-six hours. I was afraid to risk the continuous congestion of the limb.

My experience was that venous congestion was quickly produced and maintained without any discomfort to the patient. Œdema was seldom seen. I always employed some other apparatus, however, for supporting or fixing the diseased part when a joint was affected. Improvement seemed to result at once, and more quickly than usual. But then one always welcomes a new remedy that comes with a good recommendation, and one is apt to think very favourably at first of its effects.

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[1] Perhaps I should explain here that I attributed the discovery of this congestion method to Prof. Esmarch, and called it by his name until quite lately, when my friend Mr F. M. Caird, who had been at Kiel and seen Dr Bier, corrected my mistake.

The cases in which I employed this remedy were joint and skin affections. The improvement in the latter was more marked and striking than in the former. In one case of lupus affecting both feet, one foot was congested, while the other was merely blistered (a method of treatment which I have found very useful in tubercular affections). The congested foot improved more rapidly than the other, and from being the worse became the better of the two, and is so still (patient shown). Both feet, however, were subsequently scraped. My friend and colleague, Dr Norman Walker (Assistant Dermatologist to the Edinburgh Royal Infirmary), watched this case along with me; and the method of leaving off the elastic band for thirty-six hours enabled us to observe the exact progress of the case very accurately. We noticed the improvement of the congested foot to take place in one particular especially, viz., in the disappearance of the most important (because most difficult to treat) part of the disease, viz., the marginal papules and scattered foci, which to this day have not reappeared.

In regard to the joint affections I cannot speak so confidently; and as I could not keep my patients long enough to give a full and extended trial to the method, I must speak very guardedly.

I would say, therefore, that the joints seemed to improve somewhat faster than they would have done had they been treated by mere rest. But in every case I resorted ultimately to immobilization or some other treatment. This was forced upon me in all cases by the pressure of time and want of accommodation in my wards.

It will be seen, therefore, that my experience has not equalled that of Dr Bier, who speaks of "very rapid and striking improvement."

For a second period of three or four months I tried the *continuous* congestion. I did not find this any improvement. Œdema usually occurred, and the parts became paler, so that the congestion was apparently not so marked. Besides, the elastic compression had to be left off for a day or two before one could observe the changes that had actually taken place in the part.

Both plans of applying the compression were tried in a case of disease of the ankle joint, and I was better pleased with the interrupted than with the continuous. Marked improvement took place, but cure did not result; and a relapse occurring after the patient (a young woman) was sent home, excision of the joint had ultimately to be performed. At the operation it was seen that the disease had not spread from the synovial membrane to any of the bones. In this respect, therefore, the treatment may have been beneficial. During the last two or three months I have applied congestion occasionally, employing the intermittent method only, but I now apply it daily; that is to say, the elastic band is put on above the joint or diseased part every morning, and removed every evening.

A lad from Arbroath was sent to me to have his elbow joint excised for very chronic strumous disease. The congestion treatment was employed for some time, then blistering was added, and lastly, a plaster-of-Paris case was put on, and in a comparatively short time (six weeks) the lad went out apparently quite well, and with a very useful arm. He went to work too soon, however, and came back a few weeks ago with a return of the disease. The elastic band was again applied, with blistering, followed by a plaster case, and I have the pleasure of showing him to you to-night, with a fairly useful arm,—a better result than one usually gets in hospital practice.

I have not attempted to tabulate a series of cases, because an extended trial of this new remedy on a considerable scale would have necessitated my keeping a number of patients in my wards for a long time,—a thing which cannot be done in the Edinburgh Royal Infirmary on account of the scarcity of beds compared with the multitude of patients urgently requiring accommodation and treatment.

What I have to record is little more than impressions, but these have been formed from frequent careful, and, I think, critical observation of the cases in which I have employed Bier's congestion.

Besides the cases already referred to, I have used this method in about twenty other cases. And the result of my experience is that I now employ the congestion method as part of my routine treatment for mild cases of strumous joint disease and skin affections of the extremities. It certainly does no harm; it can be combined with immobilization, and aids its action, I think. Besides, it is very inexpensive, and easily applied. I do not think that this new method can take the place of amputation, excision, incision with scraping, nor of immobilization; neither do I think it very appropriate for hospital cases, because so much time is necessarily required in order to carry it out properly, as I have already stated; but I do think that the remedy is well worth a trial.

Although I am well aware that a few months' experience is not much to go upon, still I think I am justified in recommending the employment of this congestion treatment in the following cases:—

1. Tubercular skin affections of the extremities.
2. Early tubercular disease of joints (combined with immobilization or blisters), especially those in which time is of no great importance.
3. Instances of multiple tubercular disease, in which more radical treatment is inappropriate.

As an example of the last class, I would mention the following case:—

B. C., aged 25, admitted 12th December 1892, suffering from tubercular disease of the left ankle, right elbow, little finger of right hand, and right patella. The left foot and little finger were amputated, while the elbow and patellar disease were treated by Bier's method, with the addition of a splint in each case. After three months the patient left the hospital with the elbow much the same, while the disease of the patella had quite disappeared. At this date the elbow is still much the same, the knee well.

I would now venture to discuss in a few words, not the *method*, but the *theory of action* of this new remedy. Bier founds this new treatment (as we have seen) on Rokitansky's statement that "a congested lung possesses an immunity against tuberculosis." Dr Kidd admits that this is practically true; and some one, I have heard, has suggested that could we damage the mitral valves we might cure all cases of phthisis pulmonalis.

Mr Page, in his letter above referred to, suggests that there is a resemblance between this method of treatment and that by Koch's tuberculin. In the latter, marked congestion of the tubercular part is produced, as every one knows who has seen a case of lupus of the face so treated. Mr Page also refers to the beneficial effects of erysipelas on lupus, pointed out by Mr Jonathan Hutchinson.

I have already stated that I have great faith in blisters; and it seems to me just possible that these various remedies act in much the same way, viz., by bringing more blood and serum to the tissues infected with the tubercle bacillus, thus enabling the tissues to combat these bacilli more effectually. It is said that tubercular affections have a tendency to disappear spontaneously. This was first impressed on my mind by Dr Littlejohn long ago, when in post-mortem examinations (of medico-legal cases) of apparently healthy persons he frequently demonstrated to us, his students, cicatrices in the lungs. My own experience as a surgeon has convinced me that this is true in certain cases. For if a tubercular joint is kept thoroughly (and long enough) at rest, it is very likely to recover,—damaged more or less, perhaps, and liable to a recurrence or recrudescence of the disease from an injury or some such exciting cause, but still to all appearance free from disease, and sometimes wonderfully useful. Given, then, that there is a tendency to recovery, might not an extra amount of *blood* and SERUM favour this?

If (as seems to be the case) a congested lung has a better chance in a contest with tubercle, why may not a joint or other tissue be strengthened also by congestion? In connexion with this subject there is a condition associated with tubercular joint and bone disease which I have observed, but which, so far as I know, has not received much attention, viz., that the arteries supplying the limb are unusually small. If, for instance, amputation in the thigh should be necessary for tubercular disease of the knee joint, I have noticed that the femoral artery is much smaller than one would expect to see it in a case of amputation for injury or sarcoma. Of course all arteries contract when cut, but I am sure that in tubercular cases they are much smaller than in the other instances I have referred to.

It is well known that limbs affected with tubercular joint disease become atrophied. The muscles go first, very markedly, but the bones suffer also. Every one is familiar with the shrivelled appearance of such limbs. Might not this be caused by the contracted condition of the main arteries and deficient blood-supply? The atrophy is much more likely to be the result than the cause of such contraction. But I must not let myself be led astray into a discussion of this point, for I hope to be able to bring before this Society, some other time, this question of atrophy connected with tubercular joint disease.

Let me suppose, then, for my present argument that the blood-supply does become deficient in a tubercular limb or part (through reflex inhibition of the arteries), and that in consequence the diseased part is unfavourably situated as regards its contest with the tubercle bacilli, might not congestion of the neighbourhood assist in the destruction of the bacilli and the throwing-off of the disease? In other words, is this not simply another case of "the survival of the fittest," and "victory being on the side of the strongest battalions"? May not Bier's new treatment act beneficially by providing more blood and serum for the diseased part, and so deciding the battle against the bacilli?

V.—ON GASTROSTOMY AFTER THE METHOD OF WITZEL.

By Mr F. M. CAIRD, Assistant Surgeon, Royal Infirmary.

(*Read before the Medico-Chirurgical Society of Edinburgh on 6th December* 1893.)

GASTROSTOMY is usually undertaken when the œsophagus only permits the passage of fluid food with difficulty, and when the patient's strength is already giving way. The mortality associated with the operation was formerly great, partly owing to the shock consequent on the low vitality at the time, and partly from the contamination of the peritoneum with gastric contents.

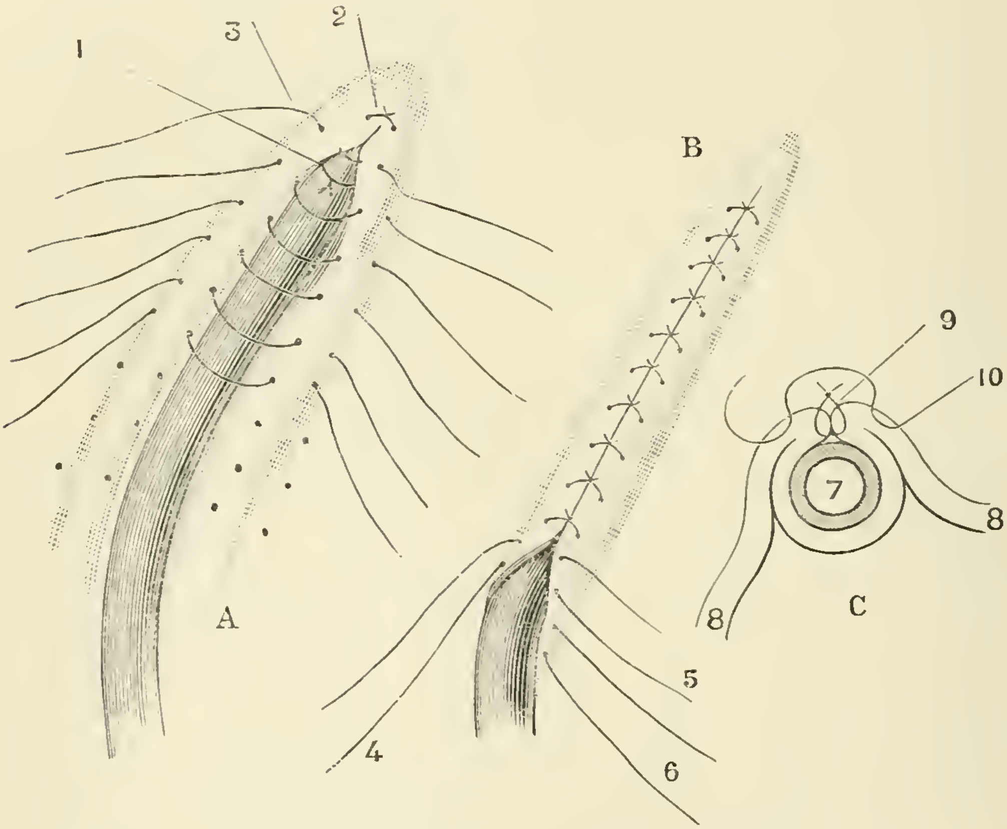
An advance was made, however, when surgeons began to advocate earlier interference, and when the operation was carried out in two stages, so that the opening of the stomach was deferred until adhesions shut off the peritoneum. Under the more favourable auspices created by increased familiarity with peritoneal surgery, it was soon recognised that the danger of septic infection might be avoided, and that the stomach might be opened at once, if it were secured with sufficient firmness to the abdominal wall, and the peritoneum perfectly occluded, so that neither was there chance of the stomach breaking loose if vomiting occurred, nor yet the fear of breaking down adhesions when feeding the patient.

As the result of a successful gastrostomy, the contents of the stomach, fluid and gaseous, were liable to escape; the adjoining skin was frequently excoriated, and the patient was sometimes far from comfortable. Moreover, in cases of simple stricture, if the œsophagus regained its function and became permeable, the closure of the fistula involved subsequent surgical interference.

Ingenious procedures were accordingly devised to perfect a gastrostomy wound which should act like a true mouth, or like a valve, and obviate the distressing leakage. Amongst these may be mentioned the methods of Von Hacker and of Girard, in which a sphincter is formed from the fibres of the rectus muscle; or those of Hahn and Ssabanajew, where, by the projection and opening of a fold or diverticulum of stomach wall between the ribs, or through the soft structures and skin above the level of the original wound, a valve-like mouth is constructed at a higher level than in the ordinary gastrostomy.

It would appear, however, that the most satisfactory plan is that which follows, introduced by Witzel of Bonn.

The patient is anæsthetised, and the customary antiseptic precautions observed. The usual incision is made, the rectus split along the course of the fibres, its sheath and the peritoneum opened. The stomach is then sought for, seized by the fingers, and a portion of the anterior aspect, as large as the palm of the hand, is pulled out at the wound, and packed around with sterilized gauze, moist and warm. The surgeon next opens the stomach. He selects a spot near the lesser curvature, free from vessels, and makes a small incision about $\frac{1}{4}$ inch in length. He has in readiness about two feet of red rubber tubing, in diameter equal to that of a drawing pencil, and slips about one inch of it into the stomach through the incision, which it accurately plugs. Should there be any excessive bleeding, it may be arrested with the catgut suture, which serves to fix the tube provisionally. Care must be taken to wipe up any escape of fluid from the stomach. The tube, which hangs across towards the greater curvature, has now to be secured in position, and a species of artificial œsophagus formed. This is managed by the surgeon raising a fold of stomach on each side of the rubber tube with a series of interrupted silk Lembert sutures, on tightening which the tube is buried for about two inches of its length in the folds. Two or three similar sutures beyond the sunk extremity of the tube effectually shut off the new œsophagus from the peritoneal cavity at the further end. A little sterilized iodoform powder is rubbed over the stitches, and a second similar series of sutures are put in over the first to promote the efficient union of the serous surfaces over the tube. The stomach should now be returned, and secured to the abdominal wall. Before returning it, a few loose sutures may be passed through the folds and outer portion of stomach wall at the free extremity of the rubber tube; and on replacing the stomach the loose sutures are employed in fixing it to the abdominal wound, which may now be closed. The surgeon there and then attaches a funnel to the rubber tube, and runs in as much food as he thinks necessary. The whole operation may be easily completed within thirty minutes.



Diagrams illustrative of Gastrostomy after the method of Witzel.

A. Shows rubber tube passed through slit in stomach, and secured by catgut suture 1. Lembert sutures beyond insertion of tube, 2, 3. The following six sutures are figured in position, but not tightened, and the position of the succeeding three is indicated by dots.

B. Sutures tightened.—Stitches 4, 5, and 6 inserted; the stomach is now returned to the abdomen, and the free ends of 4, 5, and 6 used to unite the stomach to the peritoneum and rectus.

C. Section.—Tube *in situ*, 7. Stomach, 8. Suture of first series, tightened, 9; of second series, loose, 10.

The sutures should be of fine silk, preferably black. If the stomach cannot be easily brought close against the adominal wall, a provisional tampon of iodoform gauze is used until adhesions form.

The result obtained is most gratifying. The patient speedily learns to feed himself, and there is not the slightest fear of any regurgitation of food through the wound, since the tortuosity of the new channel and the valve-like action brought about by the contraction of the stomach entirely preclude any such possibility.

The tube should be removed about once a month. In order to avoid any difficulty, it is well to cut off the free surplus of the old tube, and pass a long-eyed probe into the stomach through the portion that remains, which may now be removed. The new tube should be strung on a silken thread, the end of which is now to be attached to the probe, and so one readily slides the new tube over the probe onwards into the stomach, and, pulling on the silk, thereafter withdraws the probe. Should the œsophagus again regain its function, as in cases of cicatricial stricture, it is noteworthy that on withdrawal of the tube there is never any outflow of fluid, and the fistula rapidly heals.

The autopsy in cases examined several months after the operation has shown that the new canal gradually shortens, straightens, and its walls become thicker. The inner extremity is found guarded by a funnel-shaped arrangement of concentric folds of mucous membrane, or it projects inwards something like the ileo-cæcal valve or entrance of the ureters, thus presenting an efficient valvular defence against escape of the stomach contents.

Several points may be further illustrated by a case.

E. F., æt. 14, servant girl, was admitted to the Royal Infirmary August 17th, 1893; complains of inability to swallow. She was miserably emaciated; had sunken eyes; pale, hollow cheeks; an anxious expression. Pulse weak and small, and temperature 97° Fahr. She was herself too weak to give any history. Her sister states that five months ago the patient swallowed a mouthful of strong solution of washing soda which she found in a lemonade bottle. She at once felt extreme pain, fainted, and three hours after began to vomit. She has been in bed ever since the accident, suffering from difficulty in swallowing, which has steadily increased. During the last three weeks she has taken hardly any food at all, and for the last seventy hours not even fluids have been swallowed. Within the last three days a great change has occurred, and she is much weaker. On the morning after admission Witzel's operation, as above described, was performed, since her condition appeared critical. Three ounces of switched egg and half an ounce of brandy were at once passed into the stomach; feeding with egg and milk was afterwards carried out every four hours. She rapidly improved. The wound was dressed once or twice, and she got out of bed on the fourteenth day. On this date she weighed 4 st. 2½ lbs. She gained at the rate of about 1 lb. per week. During one week, when she was specially active, she lost 1 lb. Her temperature remained still subnormal. At the end of four weeks she was ordered to masticate and pass all her food and fluids through the mouth before sending it through the tube into her stomach. At once she began to put on flesh, her temperature rose to normal, and she gained 10 lbs. in a fortnight. Since that time she has gained about 3 lbs. a week, and now weighs about 6 st. At present she is healthy, active, and well. She suffers no inconvenience whatsoever beyond that at meal times. Not a drop escapes alongside the tube; closure is perfect; and the clamp on the tube prevents any regurgitation during exercise, coughing, or laughing. A very small quantity of liquid can be swallowed, but the stricture, which is situated about 10 inches from the mouth, defies our best efforts, and not even a filiform bougie has yet been passed.

A second case, in a male æt. 40, who suffered from impermeable cicatricial stricture, also gave a successful result. The patient died from chronic lung mischief two months after the operation. There was no sectio.

In conclusion, we might again press the claims of this operation upon the practitioner. It offers such certain relief to the unfortunates who suffer from œsophageal stricture, with such slight risk, and the after-result is so satisfactory, that it gives additional arguments to urge in favour of early operative intervention. Moreover, the principle involved in this operation of Witzel is so valuable, and so capable of modification and application to the other hollow viscera, that it is a welcome addition to our surgical methods. It is to the excellent results seen in the hands of Prof. Mikulicz in Breslau that the writer owes his introduction to the benefits of Witzel's gastrostomy.

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1. WITZEL.—" Zur Technik der Magenfistelanlegung," *Centralblatt für Chirurgie*, 1891.
2. W. VON NOORDEN.—" Beitrag zur Technik der Gastrostomie bei œsophagusstenosen," *Berliner Klinische Wochenschrift*, 1893.

VI.—CLINICAL LECTURE ON TWO CASES OF EMPYEMA.

By ALEXANDER JAMES, M.D., Physician to the Royal Infirmary.

GENTLEMEN,—The two cases of empyema which I propose to bring before you to-day are, from the purely therapeutic standpoint, not very satisfactory, but they present features so interesting and important that I believe them to be well worthy of study.

The first is that of J. B., aged 25, a carter, who was admitted to Ward 30 on June 29th, 1893, complaining of weakness and a feeling as if of fluid in the chest.

Family History.—His mother died of inflammation of the lungs, and a brother has mason's phthisis; otherwise the family history is good.

Social History.—He is much exposed to cold and wet in his occupation, but he is well housed and gets good food. He states that he is in the habit of taking one or two glasses of whisky daily.

Previous Illnesses.—He had scarlet fever when a boy, but after that nothing ailed him till about twenty-six months ago, when he had, as the result of a severe wetting, an attack of pleurisy, he says, of both sides. This seems to have been very severe, and kept him altogether off work for about eight months. He had cough at that time, with little or no expectoration; he never had any hæmoptysis. After this illness he returned to work, though he states he was still feeling weak.

Present Illness.—This he states began in March last with another attack of pleurisy, affecting the right side. The pain was very severe, and was relieved somewhat by poultices. The cough was also severe, and he states that though at first dry, after a week he began to spit, in considerable quantity, a yellow matter. He was very ill with the cough and expectoration for a fortnight, after which time the pain disappeared, but the expectoration has continued until now. He has noticed that the cough and spit varied according to the position which he assumed. When he lay on his right side he did not require to cough at all; but when he turned on his left side, the cough became severe, and the yellow expectoration came up in mouthfuls. About the beginning of May he states that he felt much better, and was able to get up, although the cough and spit continued as before. About the middle of May, however, he felt so weak that he had to take to his bed again. About four weeks ago his right chest was aspirated by a doctor, and 80 ounces of pus withdrawn. Not noticing any improvement, he came into the Infirmary.

State on Admission.—Patient is a man 5 feet 3 inches in height. He appears anæmic and much emaciated. His weight at present is about 6 stones; he used to weigh 9 st. 7 lbs.

He lies on his right side, for reasons above stated.

Respiratory System.—He has no pain, but feels short of breath, and his cough is apt to be troublesome. Expectoration is distinctly purulent and frothy. It is also copious, about two or three ounces in the twenty-four hours. The cough sometimes makes him vomit, and careful examination of the spit revealed, after several attempts, a few tubercle bacilli. Physical examination of the chest reveals on the left side nothing abnormal. On the right side, posteriorly, and below, the interspaces appear somewhat bulged, and there there is deficient movement and absent vocal fremitus. Percussion reveals absolute dulness. The level of the dulness above begins opposite the spine of the sixth dorsal vertebræ; crosses the scapula about the junction of its lower and middle thirds, and extends anteriorly to the level of the nipple. Over this dull area the breath sounds and vocal resonance are diminished or absent. Above the level of the dulness the breath sounds are harsh and almost tubular in character, and the vocal resonance is increased, also at the right apex posteriorly there is a slight impairment of the percussion note.

Circulatory System.—Pulse 112, soft, and slightly dicrotic. Examination of the heart shows that its left border extends to just outside the mammillary line in the fifth interspace. At the mitral area the first sound is slightly impure; at the pulmonary area the second sound is accentuated.

Digestive System.—His appetite is fairly good; his bowels are regular, but he states that for the last two or three weeks there has been a slight tendency to diarrhœa. Physical examination reveals nothing abnormal in connexion with any of the abdominal viscera.

Urinary System.—With the exception of a frequent deposit of amorphous urites, this appears to be normal.

He sleeps fairly well, and his temperature on admission was 102°·8.

Here, then, was a case of empyema which, although we never doubted for a moment as regards what should be the treatment, afforded us some misgivings as to what would be its ultimate result. In the first place, it had been of considerable duration,—it had lasted at least four months, probably longer. Secondly, the pus had obviously been finding its way through the lung into a bronchial tube. Thirdly, it was a phthisical empyema,—for, as has been stated, we had discovered that the spit contained tubercle bacilli. [Here it should be mentioned that the copious purulent spit did not readily show the bacilli, but after the chest had been incised, the now scanty, less purulent, and more muco-purulent spit showed the bacilli readily enough. We therefore have no difficulty in concluding that the empyema from the first was a tubercular one.]

In this case, therefore, we had to deal with a lung which was not only collapsed to a considerable extent, but was likely to be firmly bound down by a pleuritic false membrane. We carefully examined the apices for evidence of tubercular mischief, but all that we found was, as stated, a slight percussion impairment at the right apex posteriorly. This, though it appeared somewhat indefinite, was, taken in conjunction with the fact that there were bacilli in the spit, sufficient to make us believe that the tubercular mischief was at this apex. We remembered that there was a likelihood of there being more extensive tubercular mischief there than was apparent, for of course the collapsed lung and the large amount of fluid offered considerable hindrance to its recognition by physical signs. We had no difficulty, however, in making up our minds that the proper treatment in this case was incision and drainage. Now, here let me explain to you why we believed free incision and drainage was the best treatment. You know that empyemas have been treated successfully, especially in children, but also in adults, by aspiration, especially by repeated aspirations; but, apart from the consideration that incision and drainage is more thorough, and with due care a safe operation, we should have been afraid of aspiration in this patient, where there was an almost certainty of phthisical disease at the apex of the affected side. It is evident that if a lung apex has within it caseating and breaking down tubercular foci, and perhaps a cavity or cavities, collapse of it to a greater or less extent by pleural effusion will, by giving the parts rest and preventing tearing or distention by respiratory movements or coughing, act in a manner more or less salutarily. It is obvious, therefore, that the removal of such fluid by aspiration will, by allowing the lung to re-expand, expose it to the stretching effects of respiratory movements or coughing, and so act in a manner injuriously. Thus I know of a case in which aspiration of a phthisical pleuritic effusion was followed by pneumothorax, and of another in which it was followed by a very severe hæmoptysis. Such evil effects cannot, however, follow free incision and drainage in a phthisical empyema, for of course the exit of the fluid from the pleural cavity is then associated with the entrance of air into it, and so the re-expansion of the lung is not curtailed abruptly and at once, but follows slowly and gradually, and after a time. In a phthisical empyema, therefore, free incision and drainage retains all the advantages which temporary collapse of the lung may have brought about, and relieves the patient of the presence of the pus at the same time.

We therefore, on July 2nd, incised the chest between the sixth and seventh ribs in the scapular line, and evacuated 120 oz. of pus. I need not here take up your time with a description of all the details of the operation. The only points that I need mention are that the patient had chloroform, that antiseptic precautions were observed, and that care was taken to keep the patient lying as much as possible on his back during the operation, so as not to interfere with the working of his sound lung. Further, the opening through the interspace was kept small at first, so as to prevent too rapid exit of the pus, and after most of the pus had escaped it was enlarged freely with a probe-pointed bistoury. This was done also by way of precaution. As probably most of you know, the too rapid evacuation of pleural effusions has now and again caused fatal syncope.

Our patient improved greatly after the operation. His temperature fell, his cough improved, and his spit, instead of being copious, yellow, and purulent, became scanty and muco-purulent. [He was now expectorating only the bronchial and phthisical secretions, and it was now that the tubercle bacilli were most conclusively demonstrated in the spit.]

But after a few days it was noticed that, in spite of the drainage being free, the discharge through the tube, although very slight in amount, did not become serous, as it does in a case which is progressing in the most favourable manner, and further, that the temperature chart began to show oscillations. These symptoms we ascribed to the lung, long bound down, not expanding, and so entailing upon the pyogenic walls of the cavity to remain separated, and so to go on secreting pus. We trusted, however, that the lung would yet expand, and what we did to help this and to lessen the evil effects of any retained pus were as follows:—Each day when dressing his wound we introduced a few syringefuls of warm boracic solution whilst he was sitting up in bed, and then getting him to lie down this fluid ran out, bringing with it, of course, some pus. By making him cough vigorously at the same time, we got forced out more vigorously the fluid and any pus which might otherwise have been retained. Then we provided him with a spirometer, the reservoir of which we weighted, so that some force was required to blow it up. In this way we hoped that the efforts which he from time to time was required to make to blow it up would, by compressing the air in his sound lung, induce inflation and consequent expansion of his collapsed one. We remembered that other mechanical arrangements to produce expansion of the lung might be employed, notably Mr Duncan's syphon arrangement, and valvular tubes of various kinds; but remembering that our patient had phthisical disease at the upper part of his lung, and a probably but slightly healed bronchio-pleural fistula at the lower, we deemed it safer to avoid anything which might drag upon the lung too forcibly. Some five weeks after the operation, however, we advised the patient to get up out of bed and move about in the ward, with the object of aiding in the gradual expansion of the lung.

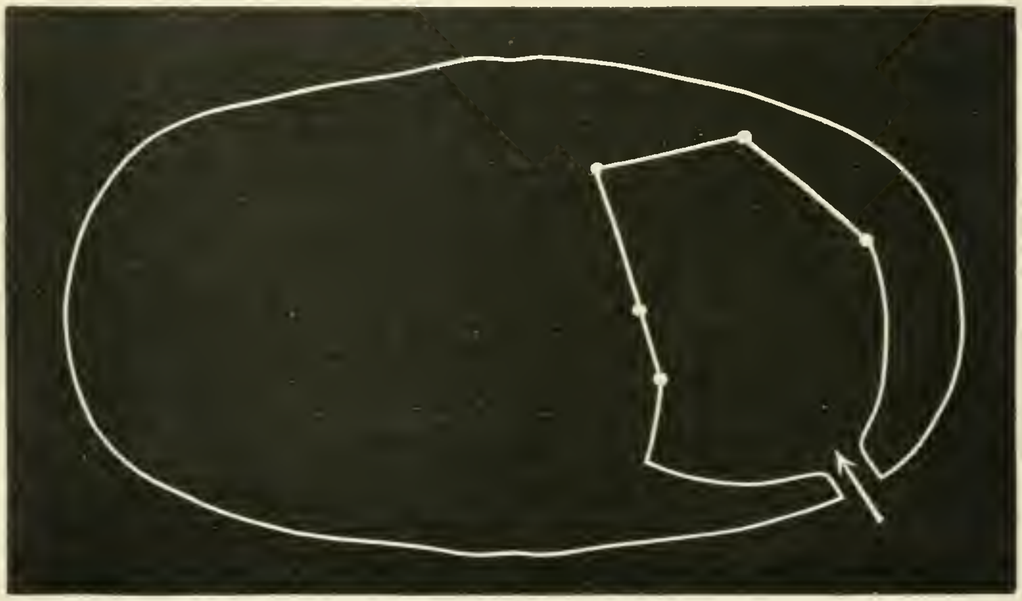

DIAGRAM I.

Still this expansion did not readily occur, and on August 7th the above Chart of his chest was taken. The method by which this was obtained was by the cyrtometer, to get a tracing of the shape of the chest at the level of the wound opening, and then by introducing a long probe through the opening in various directions on the horizontal plane, to mark out the points at which it came in contact with the inner surface of the pleural cavity. The result gives a fair idea of the relative size and shape of the cavity, and shows that at this date there had been but little, if any, expansion of the lung or retraction of the chest wall. It was noticed, however, that his respiratory capacity had somewhat increased. Thus, whilst with the spirometer he had upon 10th July registered only 54 cub. in., by 7th August he registered 71 cub. in. On 28th August another chart was taken, which showed such slight change from the former that I do not represent it. At this date his respiratory capacity was found to be 80 cub. in., an increase which was probably mainly due to increased muscularity, and to enlargement of the sound lung. An Estlander operation was now thought of, but as the patient was doing fairly well,—was taking his food and increasing slightly in weight,—we determined to persevere with our efforts to induce lung expansion, and to wait for some weeks.

The next entry which I shall read you from his case is on 2nd November,—"Has been dressed daily, the cavity being washed out with boric lotion. Takes his food well and has gained a little weight. Very little shrinking of cavity in chest has taken place, in spite of assiduous exercise with the spirometer. The external wound is looking well, but there is a good deal of discharge from the cavity."

"*Nov.* 20*th.*—Condition of cavity remains the same. Discharge has not decreased in quantity, and for the last three days the temperature has swung markedly, rising to 102° F. in the evening, and falling to normal in the morning.

"*Nov.* 22*nd.*—Operation to-day. Mr Macgillivray resected the third, fourth, fifth, sixth, seventh, and eighth ribs on the right side, removing from 1½ to 2½ inches of each. The line of resection ran obliquely downwards and outwards from the third rib in the nipple line to the eighth rib in the middle axillary line. The wound was sutured, no tube being inserted. The lower part of the wound was dressed with collodion and wool, and separated from the old incision wound by gutta-percha tissue. The tube leading into the pleural cavity through the old incision wound was packed round with wool which could be removed without disturbing the new wound. The operation lasted 1¼ hours. Patient stood the operation remarkably well, suffered some pain for an hour or two afterwards, but after getting a sixth of a grain of morphia was quite comfortable.

"*Nov.* 23*rd.*—The plug of wool renewed twice in the night without disturbing dressing of fresh wound. Temperature normal; pulse 100, of good strength. Patient comfortable, although he has some difficulty and pain when he coughs. No chloroform sickness."

Since this time the patient's condition has improved very much. By the middle of December the Estlander wound had practically healed. His temperature remains fairly normal, his pulse about 80 and of good strength. His cough is less; he has no pain; and the discharge from the wound is distinctly less than previously.

I now append a tracing of his chest taken on 8th January. It shows considerable diminution of the pleural cavity, due mainly to falling in of the chest wall, but also to some slight further expansion of the lung. You will have an opportunity of seeing him again later on. But meanwhile let me explain to you why the Estlander was performed in this oblique manner. This was in order to permit of a falling downwards and forwards of the shoulder as well as a contraction of the chest in the vertical diameter. It is evident that an Estlander as ordinarily performed, whilst it permits the chest wall to fall in, must also, by diminishing the size of the thorax below, prevent any upward rise of the diaphragm. It was hoped, therefore, that the oblique line of this resection would, in compensation for this, favour contraction from above downwards.

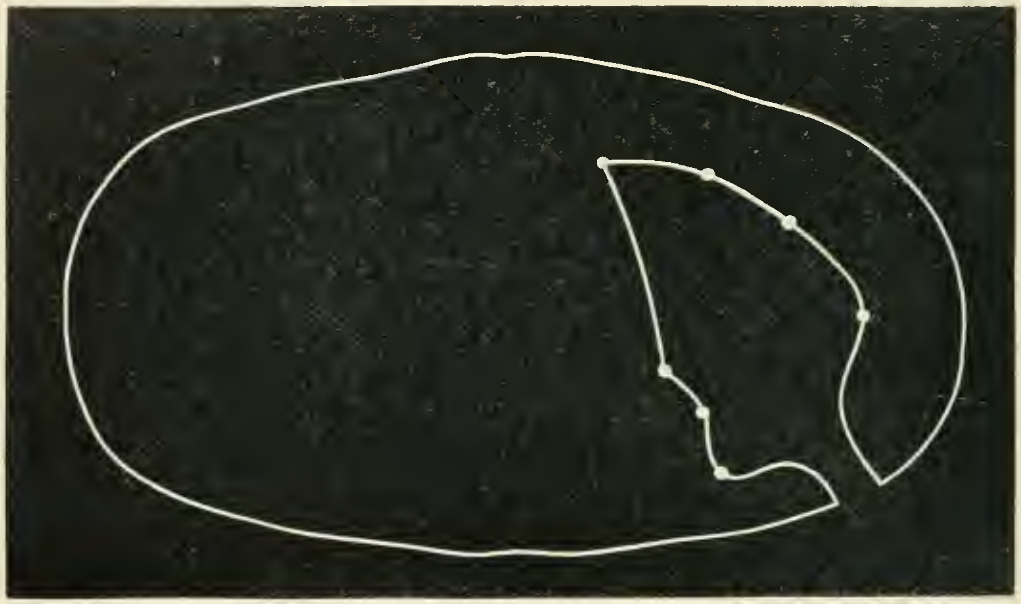

DIAGRAM II.

The second case is that of J. S., aged 32, shepherd and gillie, who was admitted into Ward 30 on October 28th, 1893, complaining of cough and difficulty of breathing for the last ten years.

Family History.—His father is alive and well; his mother died, aged 36, of a tumour; one of his two brothers has chest trouble; one of his three sisters is delicate.

Social History.—Has always had good food, except during the year when his illness commenced, when he was in uncomfortable lodgings. He has always been temperate, and his work, although healthy enough, subjects him to much exposure.

Previous Illnesses.—As a boy he had whooping-cough. Twelve years ago—that is to say, two years before his present illness commenced—he had a severe strain from the weight of a shaft of a cart on his shoulder. He states that on coming to a sudden incline the weight of the shaft proved too much for him, and he fell. Next day he spat blood, and this continued for a few days afterwards.

Present Illness.—Ten years ago, when travelling sheep, he got wet through and felt thoroughly chilled, having to walk so slowly with the sheep. Next morning he had a cough, and some time afterwards he had pain in the right side. At this time, he states also that his feet and ankles became swollen. Although feeling ill, he seems yet to have been able to move about to some extent; and seven years ago, a right-sided pleuritic effusion was diagnosed, and in the Dingwall Infirmary a large quantity of sero-fibrinous fluid was drawn off at that time. He states, however, that he has never been well; the cough, spit, shortness of breath, and loss of flesh has continued, and sometimes a little better and sometimes a little worse. He states that he has come to the Infirmary to see what can be done for him.

State on Admission.—Height, 5 ft. 7½ in.; weight, 8 st. 13 lbs.; used to weigh 12 st. 6 lbs. Muscularity much impaired. Patient usually lies on his back; if on any side, it is the right.

Respiratory System.—Breathing, 24 per minute. Cough troublesome, occasionally causing vomiting. Expectoration muco-purulent, containing bacilli and lung tissue.

Physical Signs.—On inspection the right chest is distinctly smaller than the left, and moves less with respiration. Over the lower part of the right side the vocal fremitus is absent. Upon percussion extensive dulness is met with over the upper part of the left lung. There is slight dulness also at the right apex, and there is complete dulness over the lower part of the right lung, especially posteriorly. Over the left upper lobe the breath sounds are bronchial or cavernous, with much crepitation. At the right apex there is bronchial breathing, with crepitation. Over the right lung, below, the breath sounds and vocal resonance are more or less absent. The heart and liver are in their normal position, and all the other organs are fairly normal. The temperature varies between normal and 100° F., and the pulse is usually about 88 per minute, and rather soft in character. In this patient we believed we had to deal with a phthisis of both apices, specially the left, complicated by a pleuritic effusion, and probably a not very extensive one, on the right side. We could not say how long this effusion had existed, but from the absence of resorption or hectic fever, except what might be accounted for by the phthisis, we believed it to be a sero-fibrinous one. Remembering the possibly salutary effect of such an effusion on a phthisical lung, we inclined to let the effusion alone. About a week after his admission, however, finding the physical signs of the fluid just as before, we explored his chest with a hypodermic syringe, and drew off, to our surprise, pus, but pus presenting a very peculiar appearance. It was white in colour to the naked eye, and looked exactly like white cream. A few drachms of it were removed and sent to the Physicians' Laboratory for examination. The following report upon it was returned to me by Dr Noël Paton :—" Specimens were examined unstained and stained with picro-carmine, methyl blue, iodine green, and osmic acid. The pus cells were all markedly degenerated, the nuclei hardly staining. Many seem to have broken down and set free their oil granules, which gave the peculiar creamy look to the pus. Cholesterin crystals were present. No micro-organisms could be detected. The proportion of solids is very high—14·1 per cent. There is no doubt that this is an old aseptic accumulation."

The condition here I believe to be an empyema, which is thickly encapsulated and is in process of inspissation. The micro-organisms have, as it were, been killed long ago in the products of their own life, and the pus corpuscles are breaking down. As the result of this, and of a thick capsule around, which, in puncturing, we almost feel as a hard dense layer, this empyema is doing no harm except in a mechanical way. What is to be the treatment in this case? Well, I have made up my mind to treat the phthisis and let the empyema alone. As I said, it is doing him no harm, and its removal would entail risks to which, with his double-sided phthisis, I do not feel justified in subjecting him.

[The only references to this milky character of the pus which I have as yet been able to obtain are in Wilson Fox's *Treatise on Diseases of the Lungs and Pleuræ.* At page 963 of that work, Fox has quoted Virchow[1] as having observed this milky change in pus, indicating a breaking down of the corpuscles, and consequent transformation of it into a liquefied granular detritus, capable of reabsorption. He also quotes Zeroni[2] as having found such a fluid in the pleural cavity, and Biermer[3] as having in several instances found cholesterin in such fluids.]

VII.—FURTHER NOTES OF A CASE OF SPORADIC CRETINISM TREATED BY THYROID FEEDING.

By John Thomson, M.D., F.R.C.P. Edin.

In a former number of this Journal (May 1893) an account was given of a cretin (A. C.) who, under thyroid treatment, was rapidly losing many of the symptoms and signs characteristic of his disease. At the time the case was published he had been treated for only four months; and many inquiries have been received as to whether the improvement then shown still continues, and how far it has gone. It is therefore hoped that the following notes of his progress up to twelve months from the beginning of the treatment may be read with interest.

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[1] *Cellular Pathology* (Cleaves' Translation), p. 197.
[2] Zeroni, *Das pleuritische Exudat.*, p. 69.
[3] Biermer, *Schweitz Archiv. für Heilk.*, ii. p. 116.

FURTHER PROGRESS: *April* 29.—The patient continues to grow in height, and now measures 36¾ inches. He has for some time entirely ceased snoring; formerly he used to snore so loud that he was heard all over the house. His mother says that before treatment he appeared to have no idea of the exact time of occurrence of events, and that recently he has seemed for the first time to understand the difference of to-morrow and yesterday, and even remembers whether things happened yesterday or the day before. He is still getting one-eighth of a sheep's thyroid (raw) twice a week.

May 13.—Face improving in brightness and naturalness of expression. Voice also more natural. The two lower anterior temporary molars came out a week ago. The patient is becoming very active, and evades all his mother's endeavours to keep him off his feet and in the house. In consequence of this his legs are becoming severely bent, and he has therefore not grown at all in height during the last fortnight. His appetite is exceedingly good. He has also entirely lost his old shyness, and now goes of his own accord to visit any of the neighbours who are kind to him. Formerly he would never willingly go into any house except his own home.

May 28.—Face still improving. His nose is becoming of a better shape—the bridge apparently rising, and the alæ becoming less broad. His friends say that they now see in him a likeness to one of his relatives which they never noticed before. During the last fortnight the left lower permanent molar has appeared.

June 23.—The patient is still gaining in good looks and in intelligence, and also very steadily in strength and firmness of limb. There has been no growth in height for three months. To increase the dose to a quarter of a thyroid twice a week.

July 17.—Photographed. (See Plate III.)

July 31.—Height, 37 inches. Improving generally.

Sept. 23.—His sister, who is a teacher, has been trying for some time to teach him to count, but so far without the least success. One evening recently, being left alone, he took off all his clothes himself and went to bed, a thing which he had never done before. Height, 37⅜ inches.

Oct. 21.—Improving greatly in appearance; limbs becoming thicker and more muscular, thorax larger, and abdomen less. Appetite very good. Still a good deal of bronchial wheezing. Dentition progressing; he has now four molars and one bicuspid of the second set. The upper central temporary incisors are getting loose. Height, 37⅝ inches. Ordered three-eighths of a thyroid twice a week.

Nov. 21.—Growing markedly in weight from increase in fat and muscle. He is very docile and good-tempered, and is beginning to recognise a few of the letters of the alphabet. Ordered half a thyroid twice a week.

Dec. 16.—He is still steadily improving in every way, and has not had the slightest discomfort from the increase of dose. He has now eight permanent teeth, and measures 37⅞ inches in height. His mother says that now he is almost never still, and that when she is occupied with household work he takes a lively interest in everything she does, and always wants to fetch or hold things for her, or do anything he can to help her. He is also always smiling and happy. Before treatment he used to sit still and apathetic most of the day, paying scarcely any attention to her movements. He is never shy now, and talks freely in a childish way about his clothes, toys, etc. He is making no progress in learning to count, and very little in learning the alphabet.

Dec. 20.—Photographed. (See Plate IV.)

Remarks.—The improvement, then, has continued and is still continuing steadily, although scarcely at the same rate as during the first two months.

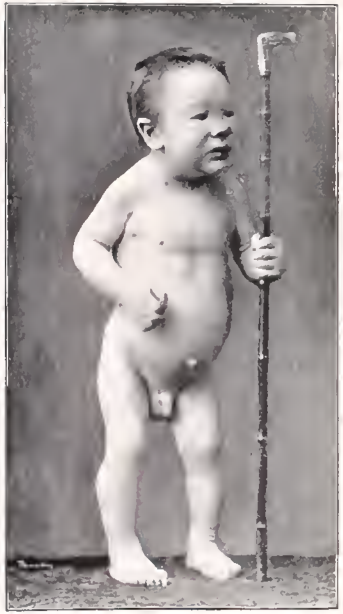
The growth in height of the skeleton, which had been at a standstill for about fourteen years, and was started again by the thyroid treatment, has amounted in the year to 4⅜ inches. Its rate has varied considerably from time to time, according to the amount of thyroid given. For some months the dose was evidently not sufficient to cause much growth; but latterly, with larger doses, the height has again increased steadily. In estimating the growth, however, the effect on the stature of the rapid bending of the lower limbs must not be forgotten.

The form and expression of the face have gone on improving, and not only have the hair and skin become normal, and the fatty tumours and umbilical hernia disappeared, but the figure has grown more shapely, and the thorax, abdomen, and limbs have changed in size, so that they now bear a much more normal proportion to one another.

The voice has improved greatly and the abnormal snoring has altogether ceased. The temperature remains normal, and the chilliness, which was formerly such a marked feature, is no longer complained of.

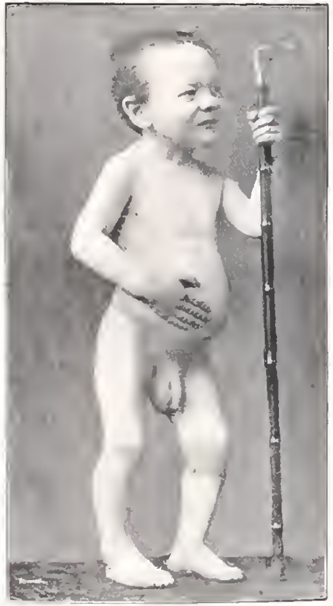
During the first few months of treatment, the lessening of the morbid swelling left the limbs very thin and weak, and the appetite was poor. This muscular debility lasted for many months, but latterly (compare Plates III. and IV.), *pari passu* with the increase of mental energy and desire for exertion, there has been a con-

I



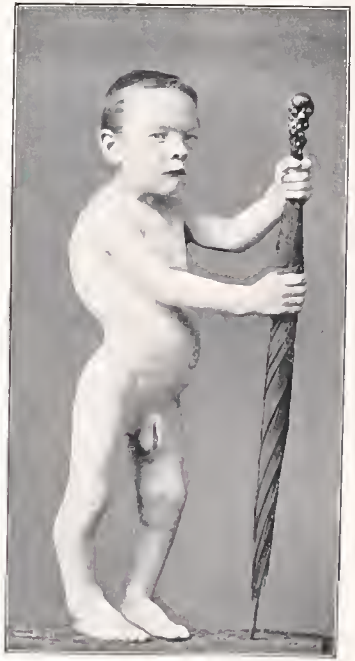
A. C., aged 18 years and 8 months, at beginning of thyroid treatment, Dec. 25th, 1892. Height, [illegible] inches.

II.



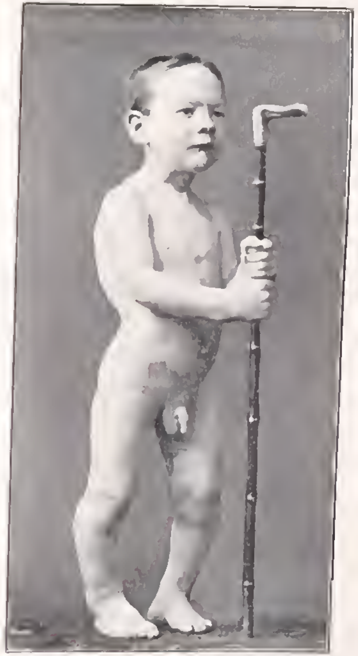
A. C., aged 18 years and 11 months, after three months of thyroid treatment, March 22nd, 1893. Height, 35½ inches.

III.



A. C., aged 19 years and 3 months, after seven months of thyroid treatment, July 17, 1893. Height, 37 inches.

IV



A. C., aged 19 years and 8 months, after twelve months of thyroid treatment, Dec. 20, 1893. Height, 37⅞ inches.

siderable growth in the bulk and power of the muscles; and the appetite has been better than ever it was before.

The rapid appearance of the permanent teeth during treatment is of interest; but it is probably only partially due to the influence of the thyroid, as the writer has another cretin under observation, in whom the second dentition began also between eighteen and nineteen, although no thyroid had been given at that time.

The mental progress, if not so great as that of the body, is certainly very distinct. The lad is making no progress as yet with arithmetic, and very little in learning his letters, but he is now thinking and acting for himself in a way that he never did before.

His morbid shyness and dislike of strangers has given place to the unrestrained familiarity and talkativeness of a little child, and his habitual discomfort and torpor to a normal sense of well-being, and quite an average capacity for enjoying life. This latter change, as has been pointed out elsewhere,[1] constitutes one of the most important and striking of all the many phases of the improvement which follows the administration of the thyroid gland in this disease.

With regard to the mode of administration of the remedy and its dose, there are three points worthy of mention,—

Firstly, With the exception of the first two or three weeks, when too large a dose was given, the treatment has caused no inconvenience at all, and it has not been necessary to confine the patient to bed, or even to the house.

Secondly, It has been pointed out that it might be preferable, on theoretical grounds, to give the thyroid in small doses frequently, rather than in larger quantities at longer intervals. The foregoing case, however (as well as others which the writer has recently had under observation), seems to show that the full effect can be obtained without any observable drawback by giving it twice a week. When the raw gland is given, this is, of course, much more convenient.

Thirdly, It is interesting to note that the patient is now, without the slightest discomfort, taking the same dose (half a thyroid twice a week) that a year ago made him very ill, and that this dose, indeed, appears now to be necessary if the full amount of improvement is to be maintained. Presumably a further increase of dose may be needed from time to time.

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[1] *Brit. Med. Journ.*, Sept. 23, 1893, p. 677.

VIII.—ABSTRACT OF A NOTE ON THE ADMINISTRATION OF ORGANIC EXTRACTS.

By R. W. Felkin, M.D.

(*Read before the Obstetrical Society of Edinburgh*, 8*th November* 1893.)

It is, I think, sometimes justifiable to communicate to this Society an incomplete piece of work. It is certainly more satisfactory to read a paper in which definite conclusions can be stated.

During the last eight months I have had occasion to employ organic extracts in the treatment of various patients, and although I have come to no definite opinion as to their permanent utility, I think it advisable to give the results I have hitherto obtained, the more so as I have had a considerable number of inquiries as to what preparations I use, the dose I have administered, etc.

First, with regard to the preparations used.—Messrs Duncan, Flockhart, & Co. have prepared for me brain and orchitic extracts, and they have also prepared me suppositories of orchitic extract. Messrs Burroughs, Wellcome, & Co. have made me tabloids of brain extract, and also suppositories of orchitic extract. The organic extracts I have used for hypodermic administration I obtained from Paris, but I shall not refer to their use in this paper. For, knowing the results which have been obtained by the administration of thyroid extracts by the mouth, I have in these cases preferred to avoid hypodermic injection, because, in the first place, it may be objected that the hypodermic injection of an organic extract may simply act as we know that injections of a solution of phosphate of soda and chloride of sodium act, and also because it may be said that the hypodermic injection of animal extracts is merely a new phase of suggestive therapeutics. I have avoided the possibility of either of these objections being raised, and for obvious reasons my patients have not known what substances were being employed in their treatment.

With regard to the dose.—This varies, of course, with the age and weight of the patient. I commence with ten minims of the liquid extract, and rapidly increase the dose to a drachm two or three times a day. I found that occasionally pretty sharp diarrhœa seemed to follow the larger doses, and also that the patients varied in respect to the time when it was advisable to administer the extract. Some took it well enough on an empty stomach, but in others it induced slight nausea, and I had to administer it during a meal. I did not find this objection in the administration of the tabloids; they have proved very satisfactory, and did not produce nausea, whether administered on an empty stomach or with food. I have also found that in some it is better to give a rectal injection of the extract at bedtime after the bowel has been cleansed by a simple enema. As, however, the injection was objected to by some of the patients, I have employed the extract in the form of suppositories or in the form of capsules; the latter can be easily introduced, and have the advantage of being readily filled by the patient with the necessary dose. The orchitic extract I have invariably administered in this way.

With regard to the way in which these organic extracts act, I am not prepared at the present time to offer any opinion, but it is evident, from what we know of the administration of thyroid extracts in myxœdema, that they can act very powerfully. I believe, also, that organs such as the ovaries and the testicles possess the power of elaborating an internal secretion, as it is termed by Brown-Séquard, which is perhaps not absolutely necessary, but, at any rate, of importance to the organism.

I will now very briefly relate a few of the cases in which I have administered cerebral extract. Full details of the cases I hope to publish later on, when sufficient time has elapsed for an opinion to be formed as to the permanence of the good results obtained.

The first case in which I administered cerebral extract was that of a boy, J. G., aged 8, suffering from pseudo-hypertrophic paralysis. I commenced to treat him on the 21st of February 1893. At that time he could hardly crawl upstairs. He took the extract regularly until the 24th of July, when he was certainly brighter; could walk up and down stairs easily; he took his food better; he could walk for a mile and a half with comparative ease; his muscles were certainly far firmer than at the commencement of the treatment, and there was a marked diminution in the size of his calves and buttocks. It was very noticeable with how much greater ease he managed to rise from the floor. He went to the country in July, and for some reason his mother omitted to give him his medicine, and the place did not seem to suit him, and when I saw him on October 2nd he had distinctly fallen back. I am now giving him the orchitic extract as recommended by Brown-Séquard.

The next case I may refer to is one of nervous exhaustion and irritability of temper. Mrs W., aged 45, married; height, 5 ft. 6 in.; weight, 7 st. 2 lbs.; has been suffering for the last two or three years from loss of memory, pain in her legs, and inability to walk far without extreme fatigue; she is very nervous and hypersensitive, is pale and markedly anæmic. She has been under various doctors in the south, and has taken large quantities of iron and arsenic, a course of bromide, and on two occasions a course of strychnine. She commenced to take brain extract on April 5th, half a drachm twice daily, and this she continued until the 25th of July. At this time she was better in every way. She weighed 9 st., could walk five or six miles with ease, was much brighter, took three good meals a day, and said she felt a different creature. Since this note she has only taken two doses of brain extract a week, and she is going on satisfactorily.

Mr D. was sent to me from England on September 20th, suffering from the effects of a long bout of drinking. I at once put him on drachm doses of cerebral extract. The good effect has been very marked. I have never seen such a rapid improvement in any patient of the kind. Of course it must be allowed that his abstention from alcohol has aided in his improvement; but yet his appetite improved almost immediately; he sleeps eight hours every night, has gained strength rapidly, and the change in his appearance is most satisfactory. Although for months he had been suffering from attacks of diarrhœa, his bowels are now quite regular, and although he appeared to be on the verge of an attack of delirium tremens, he took a complete turn for the better after a week's treatment, and still remains well.

I have used the brain extract in three cases of epilepsy, with marked success. One case was that of a man aged 34. He had suffered from epilepsy since he was 17, and first came under my care at Richmond Street Dispensary some years ago. I lost sight of him until last March, when he came to see me again. He had not improved, and was still having three or four moderately severe fits every week, and he was practically living on bromide of potassium. I commenced giving him brain extract by the mouth, and in a fortnight he had improved. He only had one fit in the second week, and since that time he has been continuously taking either the brain extract or the tabloids, and he has only had one fit during the last four months.

The next case I tried with the tabloids was that of a girl aged 17. She had suffered for eighteen months, and rarely passed a day without a fit. She could not take the brain extract, but the tabloids have suited her admirably, and the fits have been reduced to one in a week and one in ten days.

Another case was that of a boy aged 16. He suffered very severely from epileptic fits, at the same time being exceedingly ill-tempered and violent. His mental development was very faulty. The brain extract worked a very great change in him; the fits were reduced in number, and he became obedient and good-tempered. I got Dr Gibson to take this boy into the Royal Infirmary. The excitement of coming into town threw him back, and it was necessary to circumcise him, which did not improve matters for the time, but since his return home he has been doing very well. Of course, in this case it may be said that the circumcision caused the improvement; but this would be hardly fair, as there was such a marked improvement before the operation was performed.

Apart from these cases, I have administered the brain extract and tabloids with success in three cases of inveterate insomnia, in two of severe debility and general want of nerve power, and in four cases of what may be called general neurasthenia, in which one would otherwise have prescribed the Weir-Mitchell treatment. I do not wish to give details of these cases at present, as the treatment has been too recent for any definite opinion to be formed. Still I think my cases have been so successful that I am anxious for others to try this plan of treatment.

I now turn to another part of the subject altogether. I believe that I have hit upon a plan of treatment which will be of considerable use in a different class of cases. The cases I refer to are those of patients suffering from ovarian disease or other nervous disease connected with the genital system.

Before mentioning any cases or referring more specially to the method of employing the orchitic extract—for that is what I have used—I want to make a few very brief remarks as to how I came to take an interest in this matter.

I think that it is quite possible sometimes to obtain hints as to treatment from primitive people. In 1879 I had the opportunity of becoming acquainted with many of the habits and customs of Central African natives, and also of conversing with Easterns of various races. It might be interesting, but I doubt if it would be profitable, were I to detail the exact practices which I met with. It is sufficient to say that on various occasions I found that human semen was administered to debilitated patients with wonderful success.

Naturally this made some impression upon me. I also found that the natives were in the habit of devouring the raw testicles of animals, owing to their supposed strengthening properties; and still further, that during the slave wars it was the custom for both Arabs and natives to perform the most disgusting acts of cannibalism with a view to obtaining increased prowess.

Knowing this, it has occurred to me that Brown-Séquard is quite right in stating that the internal organs do not only elaborate a fluid for excretion, but also a product which is necessary for the mental and physical well-being of the individual. From this I have been led to imagine, first, that the ovary elaborates a product which is necessary for the well-being of the woman; and, secondly, that the orchitic fluid is not solely intended to fertilize the female, but that it also contains a substance which, although not necessary, is beneficial. It may be that it allays the orgasm in the female, amongst other uses.

If these ideas be true, they explain certain diseased or morbid states which one meets with in practice, and they also, I think, give a hint as to how we may deal with such unhappy cases when we do meet with them. Certain experiments which I have been able to make seem to show that I am right, and I mention them because I am anxious that my ideas should have a more extended trial than it is possible for me to give them. I have no hospital ward in which to make experiments, and in dispensary work one does not meet with such cases very frequently, and one needs to have a very large practice to gain sufficient scope for setting the matter at rest in the only practicable way, namely, by trial.

The first class of cases to which I will refer for a moment is that in which the ovaries have been removed. Now, this operation is performed for two reasons—either because the ovaries or tubes are themselves diseased, or because it is hoped to cure hysteria or some other such-like nervous condition. To take the latter cause first. As far as I am able to read, the operation does not appear to be very successful, and even in the most successful hands the patient is exposed to a risk. Now, I fancy that were either cerebral extract or orchitic extract administered, in a considerable number of these cases cure would result; and in two cases, one of which was grave hysteria, the other mental instability and nymphomania, I have, I believe, been successful in inducing cure. In both cases orchitic suppositories were employed. In another case of a somewhat similar character, namely, where in commencing puberty in a girl aged 17, a delicate, anæmic, highly excitable girl, the onset of the menstrual function was accompanied by intense excitability and loss of self-control, which almost rendered restraint in an asylum necessary, cerebral extract acted very beneficially.

In those cases where the ovaries have been removed for disease certain evils may ensue. For my purpose I need only mention grave melancholia and hyperchondriasis. I think that the administration of an organic extract may be of considerable service. At any rate in one case at the beginning of this year, in which a patient, who had had her ovaries removed, suffered from severe melancholia, it was successful; and in another case which I attended more recently the results were somewhat curious. A. P., aged 22, came to me suffering from depression, accompanied by thoughts of suicide, and an alteration in her voice. She had been to various throat specialists on this account, and had been told by her employer that she must give up her position unless she was soon cured. Her ovaries had been removed eighteen months ago. She recovered well from the operation, and went on satisfactorily for more than a year, and it was only at the beginning of this year that her trouble commenced. I hardly thought I should be able to do any good in this case, but it was a chance not to be missed. She took a month's holiday. I put her upon large doses of cerebral extract, which she seemed to appreciate; at any rate she gained weight, rather more than a stone in a month; she lost all her gloomy fears, and her voice has returned to its former pitch.

There are other cases to which I could refer, but I will hold them over for a time.

None can be aware more than I, that in order to prove my points I ought to have a far larger mass of detail to lay before this Society. It is my misfortune that this is not the case. Yet the success I have had in my few cases leads me to hope that others will be enabled to supply my deficiencies.

Part Second.

REVIEWS.

Manual of Practical Anatomy. Vol. I. By D. J. Cunningham, Professor of Anatomy and Chirurgery, University of Dublin. Edinburgh and London: Young J. Pentland: 1893.

The appearance of a text-book by such an accomplished anatomist and experienced teacher as Professor Cunningham naturally raises very high expectations on the part of both teachers and students, and an examination of this *Manual* will show that their confidence has not been misplaced.

This volume treats of the Upper Limb, Lower Limb, and Abdomen. The directions for the dissections of the limbs and the description of the parts exposed, do not afford a field for much originality of treatment, but the work is done with great thoroughness and accuracy. We have only observed one omission of any importance in this part. By some oversight the observations of Mr Harold J. Stiles on the position of the mammary gland, which were published in the *Edinburgh Medical Journal* for June and July 1892, are not mentioned, and this gland is described as extending outwards as far as the axillary border of the pectoralis major, whereas Stiles has shown that it reaches to the mid-axillary line, and that about one-third of the gland lies below and external to the axillary border of the pectoralis major.

In 1880 Professor Cunningham, at that time Senior Demonstrator of Anatomy in the Edinburgh University, published a volume on the "Abdomen" as part of a work entitled *The Dissector's Guide.* A comparison of that work with the present one will show what great advances have taken place since this in our knowledge of the topographical anatomy of the abdominal and pelvic viscera. Professor Cunningham has not only given the results of the researches of other anatomists in this department, but he has also investigated the subject himself, so that this work contains the most accurate and complete account of the form and relations of the abdominal viscera to be found in any English text-book. He has adopted the description of the form and surfaces of the liver proposed by Dr Symington in this Journal some years ago.

This work will undoubtedly become a favourite with students, and an indispensable companion of all those who are preparing for the higher examinations in anatomy.

Brain Surgery. By M. Allan Starr, M.D., Ph.D., New York. With Fifty-nine Illustrations. London: Baillière, Tindall, & Cox.

This book, written by a New York Professor of the Diseases of Mind and Nervous System, and published in London, is an attempt, and, so far as it goes, a fairly successful one, to bring into one volume a lucid and well-arranged account of the enormous amount of new work which within the last few years has been accomplished in cerebral surgery. The author is not himself an operating surgeon, but contributes to the work a large number of cases of cerebral disease operated on under his direction. The author candidly owns in his preface that, while in no way disregarding the work of foreign observers, he has endeavoured to utilize American observations and to cite American cases in preference to others. Thus in the index we find Macewen referred to twice, and M'Burney no less than twenty-five times. After a preliminary chapter on Diagnosis, the subject of Trephining for Epilepsy is discussed at considerable length. Full credit is given to Hughlings Jackson for his researches, numerous cases are described, but in conclusion the results are shown to hardly warrant continuance of the surgical treatment except as a method of diagnosis. The next chapter is a short one on Trephining for Imbecility due to Microcephalus. The different causes of the atrophic condition are well and clearly described, and conclusions fairly favourable to operation are arrived at on good grounds. Chapter IV. is on Trephining for Cerebral Hæmorrhage. Macewen's celebrated cases are described, which gave the impulse to subsequent work in the field. Some good cases are recorded,—some correctly diagnosed and successful, others in which the diagnosis was incorrect. The wise conclusion is arrived at, that in cases of traumatic hæmorrhage where a diagnosis of position can be approximately arrived at, the operation is justifiable; but in cases of spontaneous hæmorrhage operative interference must be regarded as purely exploratory in character. Chapters V. and VI., on Trephining for Abscess and Tumour, are merely sketches or outlines of the present knowledge of these most important and difficult subjects, and require much amplification. An excellent collection of cases must have given considerable trouble to make, and is of great value. The rest of the volume is made up by three short chapters on Trephining for Hydrocephalus, Insanity, and Headache, and a surgical chapter, not particularly original or complete, on the operation.

The diagrams are easily understood, and some of the photographic reproductions are admirable. On the whole, the work is one of considerable value as giving a general outline of a new and promising field of surgical work from the point of view of a well-skilled physician.

Selected Papers in Gynæcology and Obstetrics. By D. BERRY HART, M.D., F.R.C.P.E., etc. Edinburgh and London: W. & A. K. Johnston: 1893.

DR BERRY HART'S contributions to Obstetrics and Gynæcology have always been original, interesting, and of value, and some of them have even been epoch-making. It is therefore possible to accord to this volume a hearty welcome, and we think that Hart was well advised when he determined to reprint his scattered monographs, many of which have already appeared in this Journal. They are not all of equal merit, but all are of sufficient value to justify republication. To most men it would be a trying, possibly a humiliating, task to gather together out of the past their earlier contributions. They would find much to amend and a great deal to omit; but we do not fancy it has proved so to Hart, for whilst some of the conclusions to which he has come have been combated, and whilst the deductions he has drawn have been sometimes denied by others, every one is ready to admit that the work itself has been painstaking, reliable, and permanent. He has had the courage to adhere to his views, and has had the satisfaction more than once of seeing public medical opinion slowly but surely endorse these views. Conventional theories have met with little mercy from Dr Hart, and we have sometimes fancied that his method of evolving an opinion was to take up a position diametrically opposed to the prevailing hypotheses of the text-books, and then see whether experience and experiment did not accord rather with his views than with those of the books. Whether this be so or not, the results have been always valuable, and sometimes they have been startling. It is unnecessary to detail the contents of the work; suffice it to say that they embrace his writings on the Physics of the Pelvic Floor, on the Structure of the Placenta, and on the Sectional Anatomy of Extra-uterine Gestation. All the original illustrations are present, and the printing and paper reflect credit on the publishers.

Manual of the Diseases Peculiar to Women. By JAMES OLIVER, M.D., F.R.S.E., M.R.C.P. (Lond.), etc. London: J. & A. Churchill: 1893.

A MANUAL of gynæcology without illustrations and without the details of operations is a startling innovation; and when we find, further, that in it eight pages are devoted to the study of the "constitution of woman," six to the "evidence of a uterine nerve centre in the medulla oblongata," and only two to the methods of diagnosis, we feel inclined to characterize the work as positively teratological. It is Hamlet without the Prince of Denmark. There is no erroneous information in the book, it is true; but, with all deference to the author's own opinion, we do not think that what it contains will satisfactorily "meet the requirements of the general practitioner in his everyday work." Dr Oliver can do something better than this, we feel sure, and we shall look in the future for a more satisfactory and less sketchy work from his pen.

Clinical Gynæcology: being a Handbook of Diseases Peculiar to Women. By THOMAS MORE MADDEN, M.D., F.R.C.S. Ed., Obstetric Physician and Gynæcologist, Mater Misericordiæ Hospital, Dublin, etc. London: Baillière, Tindall, & Cox: 1893.

DR MORE MADDEN'S work contains forty-three lectures on gynæcology proper, and four on the diseases and abnormalities of pregnancy, and the text is elucidated by 259 illustrations, some of which, however, are little more than diagrams. In it are embodied the theory and practice of the Dublin School, and the instruments described are in most instances those of the Irish gynæcologists. The teaching of the book is sound and reliable, and in most points fully abreast of modern views. It would perhaps have been better had the lecture form been abandoned, as that always interferes somewhat with the style of the writing; but, on the other hand, the statements are always clear and the details of operative procedure complete. The use of one finger in the vaginal and bimanual examinations is, in our opinion, a mistake; the information that can be gained from the employment of two digits has far more than twice the value of that which can be got from the index alone. We can warmly recommend the work to students and general practitioners, and no doubt it will be largely consulted in many other countries than Ireland.

Cancer and its Complications. By CHARLES EGERTON JENNINGS, M.D., M.S., F.R.C.S. Eng. Second Edition. London: Baillière, Tindall, & Cox: 1893.

THE aim of the author when he published the first edition of this monograph was to contend for that view of cancer which placed it amongst local diseases; that therefore the occurrence of cancer might often be prevented, and that complete extirpation of the disease in its earliest stage might be considered curative. This view has had much to contend against, and perhaps no obstacle has been greater than the influence of that master of surgical pathology, Sir James Paget, who wrote and argued in favour of the constitutional as distinguished from the local view. It may, we suppose, be safely presumed that the more generally accepted and acted upon view now is the local one, and to the existence of this state of surgical opinion the first edition of Dr Jenning's book probably contributed. The question of cancer being a local disease is fully and fairly discussed in Chapter III. Chapter II. is devoted to the description and classification of cancers; the term cancer being used in its wider popular sense to include the sarcomata, to which no serious objection need be made. The following chapters of the book deal with cancer in different positions and in various organs. The descriptions of these are perhaps rather sketchy, but they are well done, and for practical purposes may be regarded as sufficient.

The indications for operation are given in individual cases, and the perusal of the author's results ought still to be an encouragement to surgeons to operate early and to remove freely. The aim of the author is so praiseworthy, and the book as a whole is so well written, that we do not feel it would be fair to either the author or his book to review it from a too critical pathological standpoint. It is a book that all practitioners might peruse with advantage.

Lectures on the Comparative Pathology of Inflammation, delivered at the Pasteur Institute in 1891. By ELIAS METCHNIKOFF, Chef de Service à l'Institut Pasteur. Translated from the French by F. A. STARLING and C. H. STARLING, M.D. London: Kegan Paul, Trench, Trübner, & Co.: 1893.

To those unacquainted with this work in its original French this translation ought to be gladly welcome, for no more striking, original, and suggestive work has been done on inflammation than that by Metchnikoff. It is submitted to the profession, and indeed to science generally, in the volume before us, in the form of twelve lectures. Everyone at all acquainted with modern medical literature knows the author's name and more or less of his theory of phagocytosis; but for the full understanding of that theory, and for an adequate appreciation of the important bearings of the whole subject, the perusal of these lectures is necessary, and will amply repay the time required for it. The author shows that infection is a struggle between two organisms. He uses the intra-cellular digestion as it can be studied in the protozoa to form the foundation-stone of his theory, and the first link in a chain of observation and reasoning ending in the fully-developed doctrine of phagocytosis. From the protozoa he leads up through the various divisions of the invertebrates to the vertebrates, tracing the differentiation of mesoblastic cells and their phagocytic action. He illustrates the positive and negative chemiotactic effect of the toxines produced by microbes, and the important part this plays in infective processes and in determining the issue in individual instances of infective invasion. The well-known phenomena of inflammation are discussed and explained on the basis of his investigations into the comparative pathology of the protective processes seen in different classes of animals; and there can be no doubt that his work has thrown a flood of light upon processes which were shrouded in considerable obscurity. To those who work more comfortably in the light, even a good working and logical hypothesis is of value; but we consider that Metchnikoff's work gives more than this,—that, in fact, it is the enunciation of a carefully investigated truth. That that truth should have limitations and require qualifications may be readily acceded, and both from the hands of other workers and of critics these will not be, and indeed already have not been, lacking. The book is well illustrated, and this English translation has an appendix dealing with some of the criticisms on what the author calls the "biological theory of inflammation." The translators have done their work most satisfactorily, and all the illustrations in the original French edition have been reproduced.

Les Centres Cérébraux de la Vision et l'Appareil Nerveux Visuel Intracérébral. By Dr VIALET. Paris: Felix Alcan: 1893.

THOUGH necessarily in great measure a compilation, this book is an excellent critical digest of the numerous and important experimental and clinical data which constitute the basis of our present knowledge of the subject of which it treats. It is impossible, where so many facts are recorded, to give a short abstract of the contents of Dr Vialet's volume. The text occupies 350 pages, and there are close on 100 illustrations, many of which are most elaborate, and refer to the five cases of hemianopsia investigated by the author. The whole of the anatomy of the parts concerned, the experimental physiology and pathology, as well as the results of and deductions from clinical experience, are all reviewed. It is certainly a work which should be in the hands of all ophthalmic surgeons. A good *résumé* by the author himself will be found in No. 62 of the *Semaine Médicale* for 1893.

An Outline of the Embryology of the Eye. By WARD A. HOLDEN. New York: G. P. Putnam's Sons: 1893.

THE development of the eye is one of the subjects which early attracted the attention of embryologists. There is little short of what might be called a voluminous literature on the subject, and there are not a few points as to which there is still some difference of opinion.

Although several text-books exist in which the embryology of the eye is very fully discussed, we do not remember to have met with any more useful to the ophthalmologist than the one before us, which carried the Cartwright Prize for 1893.

Dr Holden begins his essay with a schematic sketch of the various processes, illustrated by excellent diagrams, and then proceeds to give an accurate histological description of the successive phases of development, which he illustrates by means of some thirty pen drawings from his own preparations.

A knowledge of the embryology of the eye is most useful to the ophthalmic surgeon, although it is a subject which is often neglected. Dr Holden's little work can be thoroughly recommended, and will be found to be easy reading.

A Manual of Medical Treatment, or Clinical Therapeutics. By I. BURNEY YEO, M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, London, and Physician to King's College Hospital. Two Volumes. London, Paris, and Melbourne: Cassell & Co., Limited: 1893.

DR BURNEY YEO, in this reference book, objects to any one calling it a "rapid reference" book, so we take a middle course. He has approached the study of disease from the point of view of treatment, not, as is so often done, from the side of the remedy, but from the side of the disease. He has not, however, confined himself to treatment, general or symptomatic, but has also entered into a consideration of the clinical history, course, and pathological character of each disease. In consequence of this decision he has produced a very readable and instructive book. He does not go very fully into the clinical part of his subject, just touching in a light but suggestive manner on the important points, especially emphasizing those which require consideration in planning the requisite treatment. There is hardly a page in the two volumes in which something instructive and of interest may not be read; and although, as we have said already, the author does not approve of reference books, we are of opinion that his work will find two useful applications. It will act extremely well as a book to refer to when in difficulties, but it will also repay careful reading. It is very probable that few would care to read it from cover to cover merely as a text-book, but careful perusal of those parts of the book bearing on any cases which might be on hand at the time would prove a very advantageous exercise. It would be useless to criticise the contents too particularly. Dr Yeo, as a rule, gives the opinions of many others besides his own, and is not very dogmatic on anything. He suggests rather than asserts. Nearly all the chapters are closed by a list of prescriptions culled from various sources. We do not understand why Vol. I. ends in the middle of a sentence, while the next volume begins with a new part.

Rheumatism: Some Investigations respecting its Cause, Prevention, and Cure. By PERCY WILDE, M.D. London: John Bale & Sons; Bristol: J. Wright & Co.: 1893.

ASTHENOXIA is the term used by Dr Wilde to denote the cause, in his opinion, of the rheumatic state. Being interpreted, this means the inability of the organism, through weakness and other causes, to oxidise the acid compounds produced by the wear and tear of muscular action. He has found that this oxidation is best obtained by the use of hot moist vapour baths with the production of copious sweating; salicylates are not indicated in acute rheumatism, as they diminish oxidation. He claims to have treated 111 cases without the occurrence of cardiac complications in a single instance. All these cases must have, therefore, been in all probability first attacks, for obvious reasons.

The book is thoughtfully written, and merits perusal. His description of the combination of lactic acid with muscle is inconclusive, and needs more careful analysis.

A Guide to the Examination of the Urine. By J. WICKHAM LEGG, F.R.C.P. Seventh Edition. Edited and Revised by H. LEWIS JONES, M.A., M.D., M.R.C.P. London: H. K. Lewis: 1893.

THE seventh edition of this elementary book on the examination of the urine needs little further notice than the simple record of the fact that it has appeared. The statements contained in it seem clear and accurate as far as they go. This seventh edition contains some twenty pages of reading matter above that of the previous edition.

Notes on the Newer Remedies: Their Therapeutic Applications and Modes of Administration. By DAVID CERNA, M.D., Ph.D., Demonstrator of Physiology, University of Texas, Galveston. Philadelphia: W. B. Saunders: 1893.

THESE "Notes" will be found very useful for those who wish to study the many "New Remedies" which are so much advocated in the treatment of disease.

Formulaire des Médicaments Nouveaux et des Medications Nouvelles. Par H. BOCQUILLON-LIMOUSIN. Fourth Edition. Paris: J. B. Baillière et Fils: 1893.

THIS is an excellent work, and may be consulted with much profit.

Notes on Medicinal Remedies. By J. B. STEPHENSON, Member of the Pharmaceutical Society of Great Britain, etc. London: Baillière, Tindall, & Cox: 1893.

THE author, in his preface, tells us that the aim of these Notes is to give such an account of the action and uses of the drugs mentioned "as may be a practical guide to their use in simple ailments, and may afford information which it seemed desirable that educated and intelligent persons should possess." Many of the substances described in this book should never be used even by "educated and intelligent people," except by the direct orders of a medical practitioner,—such as hydrocyanic acid, phosphorus, etc.

It is a book which may, however, be of much use to chemists, as giving a general knowledge of the actions and uses of many well-known drugs. The book, however, abounds in mistakes which ought to have been avoided. As examples we might mention—Actæa racemosa is not a *tree* (page 11); ether, in English, is not spelt with a diphthong (page 12); colchicum is not a *bulb*, but a *corm* (page 28); dill is not *seeds*, but *fruits* (page 31); so, too, with fennel (page 33); Rochelle salts is not *tartrate of soda*, but tartrate of soda and potash (page 58); the *gum resin* scammony is *not* an ingredient of colocynth pills (page 60); etc.

The Quarterly Medical Journal for Yorkshire and the Adjoining Counties. Vol. II., Part 1, October 1893.

Last year the *Sheffield Medical Journal* was started, and was received with so much favour that after only one volume has been completed the promoters of the enterprise have waxed more ambitious. The outcome is an enlarged journal with a much elongated name. We welcome this proof of vigorous growth in one of the youngest of the provincial journals most cordially, doing so especially because such growth is an index of the continuing prosperity of the Sheffield School of Medicine. Mr Simeon Snell is the editor of the new venture, and a very formidable list of contributors and abstracters is printed on the first page. We do not consider that the future of a journal can be told from a perusal of the first number, and would just note that the *Quarterly Medical Journal* is well printed on good paper, that the contained papers are all interesting and well illustrated, and the abstracts are copious and well chosen. We wish the new journal all success.

The Transactions of the Clinical Society of London. Vol. XXVI. London: Longmans, Green, & Co.: 1893.

As usual, these *Transactions* are full of interesting and valuable records of cases, individual notice of which would be invidious. A case of nævus involving the whole of the right side is very well illustrated, and among the other communications are details of cases of Pancreatic Cyst, Double Empyema, rare forms of Peripheral Neuritis, and of Pseudo-bulbar Paralysis. A very large number of the cases recorded are of a surgical nature.

The Wine of Life; or, a Book of the Songsmiths. Arranged by F. Mary Colquhoun. Edinburgh: Andrew Elliott.

This pretty little book owes its poetical first name to a saying of Principal John Caird, that poetry is the intellectual wine of life. Its kind-hearted compiler has a warm heart for the medical profession, and has done much in a modest yet sensible manner to help suffering women to get home-hospital treatment, and has sent her book to this Journal in the hope of introducing some of the poetry of life into our professional prose. The many selected pieces, and some original ones, are woven together into a web of religious and philanthropic activity, intermixed with sadness of partial failure, but the general tone is admirable.

One most delicious anachronism on page 44 must be corrected in next edition. It is in a couple of prose sentences, of which a few are interspersed with the poetry, and runs thus:—

"The old heathen doctor, Galen, praised God for his handiwork in the human body, just as if he had been a Christian or the Psalmist himself."

"It is said he had this sentence set up in large letters in the great lecture-room in Paris where he attended,—'I dressed his wound, and God healed him.'"

The grammar of both sentences is somewhat remarkable, and the meaning obscure, but there is no doubt that the good authoress has put a saying of Paré into the mouth of Galen.

Tales of the Children's Ward. By HONNOR MORTEN and H. F. GETHEN. London: Sampson Low, Marston, & Co., Limited: 1894.

THIS is a beautifully printed and prettily illustrated book, containing several short sketches of hospital life from the nurse's point of view. The sketches vary much in length and importance. The central one, called the Story of a Nurse, which appeared originally in the *Graphic*, has the bones in it of an excellent novel, and is very well told. There is a heroine, a little too excitable and perfect for the *rôle* of the common or garden probationer, but she breaks down at last, and excites the pity of all her "fair women friends in uniform," when she marries the quite inevitable major. Another good one, evidently by the same hand, is the Ornamental Probationer,—not an exaggerated sketch. As is natural enough, there is rather too much of what the early Victorian novelists called sentiment. M. Lolo, the model student, loves Nurse Doris, and dies of small-pox. Sister Mona had the most beautiful face, and was always smiling; yet people said when Sister Mona did not smile her face was the saddest face on earth; and so on. But with all its little faults the book is interesting and well written,—a capital book to put in the hands of girls who think that nursing consists in smoothing pillows and arranging flowers in a comely uniform, tempered by adoring students and appreciative surgeons.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING III.

Wednesday, 20th December 1893.—Dr Clouston, *President, in the Chair.*

I. Exhibition of Patients.

1. *Dr Bramwell* showed—(*a*.) A case of psoriasis treated by thyroid feeding. The patient, a girl aged 17, had suffered from the disease for two and a half months before she came under Dr Bramwell's care (on 7th September 1893), and had been treated for six weeks in one of the wards of the Infirmary by a variety of external and internal remedies, without any improvement taking place. From 13th September to 14th October moderate doses of Brady & Martin's thyroid extract were administered in 5, 10, 15, and 20 minim doses (on the 13th, 20th, 27th September, and 5th October); the result was distinct but not marked improvement. On 14th October Duncan & Flockhart's extract was then substituted for Brady & Martin's preparation (which had run short), in 1, 2, 3, 4, and 5 drachm doses, the latter dose (equal to $\frac{5}{8}$ of a gland) being continued from the 8th to the 25th November. During the time that the patient was taking Duncan & Flockhart's preparation there was slow improvement; it seemed to come to a standstill about the 14th November, and many new patches of eruption developed on the scalp. On 20th November the patient was placed for four days on milk diet, and a dose of cascara ordered each night, for the bowels had been constipated. The milk diet was continued till, on 25th November, Burroughs, Wellcome, & Co.'s tabloids were substituted for the liquid extract, and immediately afterwards a notable improvement took place. One, two, three, four, and finally five tabloids were given per diem. On 20th December, when the patient was shown to the Society, an immense improvement had taken place. She is now (15th January) quite well; the skin being beautifully soft and healthy all over the body. (The patient was shown to the Society on 17th January. Photographs showing the appearance of the patient before treatment were exhibited at the meeting.) The case showed that in order to effect a cure it is necessary in some cases to administer large doses of the thyroid extract, and to continue the treatment for long periods of time. In some of the cases in which the remedy seems to have failed, it is probable that the failure was due either to an insufficient dose, to a too short period of administration, or to the fact that the patients were not kept under

continuous observation in the wards of a hospital. The last is probably an important point.

(*b.*) A case of LUPUS which has undergone very great improvement as the result of thyroid treatment. The patient, a girl aged 17, had suffered from the disease for nine years; and during that period had been subjected to a number of different plans of treatment, including the injection of Koch's tuberculin. The latter plan of treatment had been followed by some improvement, which was, however, only temporary. The patient was sent into the Infirmary by Dr Allan Jamieson (to whom, and to Dr Norman Walker, Dr Bramwell was indebted for the case), with the object of having the face scraped. (Photographs were exhibited showing the condition of the disease before, during, and after the thyroid treatment.) The patient had been continuously under treatment either in or out of hospital for eleven months. Dr Bramwell said that he had given the thyroid extract in this case of lupus partly as an experiment. After seeing the rapid recovery which occurred in some cases of psoriasis, he thought it only right to try the remedy in lupus. But in addition to this purely experimental reason, he had given the remedy with a definite purpose. He thought that it was not unlikely that the secretion of the thyroid gland had some influence in protecting the body against tubercular lesions; or, to put the matter in another way, that the absence of the thyroid secretion perhaps predisposed to and favoured the production of tubercle. He based this opinion on the fact that many myxœdematous patients died from tuberculosis. In his article on "Myxœdema" in the first part of his *Atlas of Clinical Medicine*, he had referred to a remarkable case which occurred under the care of Dr Mackie-Whyte of Dundee, in which a patient, aged 72, died from diffuse tuberculosis. The disease at that time of life in a diffuse form was extremely rare. (Professor Greenfield had also directed attention to the fact that myxœdematous patients often die from tubercle.) This and other cases seemed to show that the absence of the thyroid secretion from the blood and tissues of the body predisposed to the production of tubercle. Now, if this is so, it was not unreasonable to suppose that the administration of thyroid extract might be a preventive against tubercle, and a beneficial remedy in tubercular lesions of the skin, and perhaps of the internal organs. The remarkable success which had attended the administration of the remedy in this case of lupus was in some degree perhaps a confirmation of this theoretical opinion which he (Dr Bramwell) had formed by the logical process just indicated. Several other very wide and important therapeutic questions and possibilities had also occurred to him, but he would not refer to them on the present occasion. In this case of lupus it was at once apparent that the thyroid extract produced a marked diminution of the vascular injection round the lupus nodules. To test this point thoroughly the remedy was on several occasions omitted for a week, and then again administered; the diminution in the vascularity of the skin lesion which invariably resulted after a few days of thyroid administration was apparent to every one who was watching the case. The patient had slowly but continuously improved; the disease was not yet cured, but the improvement was so marked that Dr Bramwell hoped and expected that in the course of a few months still further improvement, and perhaps a complete cure, would take place. If such an intractable disease as lupus could be cured, or even materially benefited, by the internal administration of thyroid extract, a great therapeutic achievement would undoubtedly have been attained. So far as he knew, no internal remedy which had as yet been discovered had any distinctly curative effect upon lupus. Dr Bramwell said that it was desirable if possible to explain such a remarkable result as that which had already taken place in this case. He hardly thought that the thyroid extract acted as a direct antidote to the tubercle bacillus; it was more likely that the extract improved the condition of the skin, and enabled the tissues to overcome, eradicate and expel, as it were, the tubercular lesion. If this explanation was correct, it was only reasonable to suppose that in lupus the cure would necessarily be a very slow and gradual one. It was possible, however, for the reasons given above, that the thyroid extract exerted a more direct antagonistic influence upon tubercle bacillus, and therefore upon the lupus lesions in the skin.

(*c.*) A case of LUPUS, in which treatment had only just been commenced. The patient, a girl aged 18, had suffered from the disease for nine years. The disease was very extensive; the face had been repeatedly scraped, and the disease had again and again returned. The patient was admitted to Ward 5*a* under Mr Cotterill's care, in order to have the face again scraped. In going round the ward, Dr Bramwell had seen the patient, and asked Mr Cotterill to transfer the case to him in order that he might try the effect of thyroid treatment. He was much indebted to Mr Cotterill for kindly consenting to this arrangement. Treatment had only just been commenced. He brought the case before the Society in order that they might see the condition of the patient before any effect had been produced. He proposed to bring the patient again before the Society at a future meeting, in order that they might see the result of the treatment, whatever it might happen to be.

2. *Dr J. C. Dunlop* exhibited three patients showing how strong the HEREDITY OF DEFORMITY can be. J. S. had his ring and middle fingers of left hand webbed, his son had an exactly similar deformity, and his grandchild, the child of the second patient shown, had the ring and middle fingers of both hands webbed, and also three toes on both feet webbed. These cases showed a deformity transmitted directly to two generations. Dr Dunlop was unable to trace the earlier history of the family.

3. *Dr Norman Walker* showed a case of EARLY RODENT ULCER in the non-ulcerative stage.

4. *Mr Caird* showed a case of CHARCOT'S DISEASE in both knees.

II. EXHIBITION OF PHOTOGRAPHS.

Dr William Russell showed Photographs of cases of LUPUS treated in Berlin with tuberculin.

III. ORIGINAL COMMUNICATIONS.

1. *Dr Byrom Bramwell* read NOTES ON A REMARKABLE CASE OF SPORADIC CRETINISM.

Dr Ireland said it was a very striking fact that so many cases of this disease had occurred in one quarter in Edinburgh. It would be of great importance to ascertain the cause of its having this endemic character. He was at present trying treatment by thyroid gland in the case of a Mongolian idiot. Some improvement had resulted, but he hesitated to say that it was greater than would have occurred under the usual methods of treatment. He was disappointed that there had not been more improvement in the mental condition in Dr Bramwell's case. It was probably accounted for by the fact that the child had reached an age at which the brain might be expected to have closed its development.

Dr Mackenzie asked whether this condition of cretinism was due to diminution or loss of function of the thyroid ?

Dr Taylor, referring to the statement that cretinism and myxœdema were specially prevalent in a particular locality in Edinburgh, said that in making inquiry into the matter it was to be remembered that there were several different supplies of water for the town, that there were different degrees of humidity in different districts, that in certain places there had formerly been lochs, and that in some localities diseases of a remittent type had at one time been prevalent. He asked Dr Bramwell to tell them to what part of the town he referred, as the more observers there were the sooner would the cause be discovered.

Dr Gray, referring to the changes in the jaws which Dr Bramwell had described, said it would be of great interest to know whether or not the permanent incisors showed any signs of coming through. If they did, it would show that an extraordinary access of development had taken place in one respect at any rate. He suggested that attention should be given in such cases to the form of the palate and its changes under treatment.

Dr Mackenzie asked if the statement which had been made was true that in sporadic cretinism fatty tumours occurred, while in the endemic form they were absent ?

The President said they were all very much indebted to Dr Bramwell for his ably worked out paper. He could not help being struck with the intense maternal affection in this case,—

probably one of the intensest of which they had any record. It was one of those things without which Nature could not go on. During thyroid treatment, and perhaps for some time afterwards, it was necessary to be exceedingly careful. Both the breathing and the heart centres were then extremely liable to be inhibited by very slight causes indeed. He had had a case of myxœdema in which the brain was specially affected, as shown by a severe attack of mental disease. Under thyroid treatment the patient made a perfect recovery. On the Saturday night after her return home she and her friends had a big drink and supper, and on the Sunday morning she took an enormous breakfast. The result was she died in the course of the day.

Dr Bramwell, in reply, said he agreed with the President in thinking that great caution was necessary in carrying out the thyroid treatment in cases of myxœdema and sporadic cretinism. In these diseases rapid emaciation and great cardiac debility were often produced, especially if the dose was excessive, or if the patients were old and debilitated. It was for this reason that he usually kept his myxœdematous patients in bed during the earlier stages of the treatment. He agreed with Dr Ireland in thinking that the reason why no marked improvement had as yet occurred in the mental condition of this patient was owing to the age of the child. The case was, it must be remembered, a very severe one,—in fact, the most aggravated case of sporadic cretinism which he had ever seen or which he had found recorded in medical literature. In such a case it could hardly, perhaps, be expected that very marked or rapid improvement in the mental condition would take place. The patient was to all intents and purposes an infant (though 16¾ years old). She was not only an infant, but an idiot. The degree of mental development which is produced in a healthy infant in the course of six months is not, after all, very great. It was unreasonable to expect, in the course of six months, a greater amount of mental development in this case than would take place in a healthy infant in six months. Probably that amount of mental development had actually taken place. The cases of sporadic cretinism in which the improvement was most marked and rapid were those in which the patients were young, or in which, notwithstanding the presence of the disease, a certain amount of brain development had already taken place. He had at the present time under treatment a child 3 years old, who had manifested the first symptoms of the disease when it was a year old. Before treatment, it looked like a baby of eight or nine months; it had no teeth; the anterior fontanelle was widely open, and all the characteristic symptoms of the disease were present. After a few months of treatment, an enormous improvement had taken place. The fontanelle was now almost closed; the umbilical hernia had entirely disappeared; the child had got all its first set of teeth; it was mentally much more lively and active; it now looked like a healthy child of two years old; it was creeping about actively, but it could not yet stand or speak. In reply to Dr Mackenzie's questions, he said that it was now admitted that sporadic cretinism was due to arrested or defective secretion of the thyroid gland. In some cases of sporadic cretinism the gland was perhaps congenitally absent; in others, its development had become arrested, or the gland diseased in early life. He could not answer Dr Mackenzie's second question from his own personal knowledge. In well-marked cases of sporadic cretinism, pseudo-lipomata were, so far as he knew, always present. His experience of endemic cretinism was not sufficient to allow him to say whether pseudo-lipomata were always absent in cases of endemic cretinism, but it had been stated that that was the case. As Dr Mackenzie had said, it had been suggested that the absence of pseudo-lipomata was a distinctive feature of endemic, as distinct from the sporadic form of the disease. In reply to Dr Gray, he said that in this case the palate was very broad and deep, the very reverse of a V-shaped palate. The gums were so swollen and inflamed that it was difficult to be sure about the condition of the incisor teeth. He would, however, examine the point more carefully when he next saw the child. He was interested to hear of Dr Ireland's case of Mongolian idiocy; for through the kindness of Dr John Thomson he had recently had an opportunity of seeing a typical Mongolian idiot, which had grown and improved considerably after a few weeks of thyroid treatment. So far as his experience went, bad effects from the treatment chiefly occurred in cases of myxœdema and sporadic cretinism. Healthy persons could usually take large doses of the drug (equivalent to half a gland daily) without bad effects; but there were no doubt idiosyncrasies in this respect. Some people were certainly much more susceptible to the action of the drug than others. He had merely mentioned the circumstance of the possible endemic distribution of the disease in a certain part of Edinburgh incidentally. The locality to which he referred was Glenogle Road, the rows of houses running off from it, and the surrounding district. So far as he could see, the endemic distribution of the disease (if it was more than an accidental circumstance) could not be accounted for by any peculiarity in the water-supply. He agreed with Dr Ireland in thinking that it would be an exceedingly difficult matter to determine why the disease was more prevalent in one part of the city than in another. It might, of course, be that further information would show that this apparent prevalence was merely accidental, or that it was not a fact; but Dr John Thomson and himself had been so much impressed with the facts he had mentioned that they were anxious to try and arrive at a definite conclusion on the point. They would be very much obliged to any Members of the Society who would give them information which would enable them to settle the matter.

2. *Dr Sloan* read a paper on A SELF-INFLICTED BULLET WOUND OF THE HEAD.

Mr Hodsdon said they had to thank Dr Sloan for bringing before them this interesting case, which raised many points of great importance. Practically anything might be done to the brain in this region without interfering very much with consciousness. He mentioned two cases he had seen in which the frontal lobe was injured in children, and in which there were no mental symptoms then or afterwards.

Dr Sloan, in reply to questions, stated that there had been excitement in his case, but it was of very short duration. Though the revolver had been discharged so close to the head, there was no singeing and no blackening. It was loaded with ordinary black powder.

Dr Byrom Bramwell remarked that we ought to be very careful in saying that there were no mental symptoms in such a case. There were certainly often no great mental symptoms, but the patient's mental disposition was often afterwards altered. He referred to the celebrated American crowbar case, an account of which was given in Professor Ferrier's book. In that case the man's whole disposition had been changed afterwards. Except in young people, an extensive injury to the frontal lobes was attended by some fine alteration in the mental condition, which, if carefully looked for, would always be found.

Dr P. A. Young mentioned a case of a similar kind of which he had recently heard. A patient in an asylum was struck on the head by another patient with a coal-axe, and the whole of the frontal region of the skull was driven into his brain. The case seemed a hopeless one, but the fragments were carefully removed, and the patient not only recovered from the acccident without a bad symptom, but was afterwards perfectly sane.

Dr Ireland said that in such cases one of two things should be expected,—either mental derangement or diminution of mental power. He thought that, as a general rule in such cases, the patients became weakened in mind. The power of attention and of grasping hard problems, and the power of moral control, were injured.

Dr A. Lockhart Gillespie said that the absence of blackening could be explained by the fact that the revolver was held so close to the skin. The part that was blackened would either be destroyed or pushed through the wound.

Dr William Russell asked Dr Sloan why he thought that the longitudinal sinus was injured? It was almost impossible to believe that this could have been so without very profuse hæmorrhage resulting.

The President, in thanking Dr Sloan for his paper, said that it was an extraordinary fact that cut-throat wounds, smashes on the head, and injuries to the brain did often result in the cure of insanity. He mentioned the case of a young man who suffered from suicidal melancholia. The case was a very bad one, the patient scheming in every possible way to put an end to himself. At last he succeeded in throwing himself over a window a height of about 30 feet. He came down on his face, and injured himself most severely. The result to his mental condition was that from that day onwards he began to recover. He thought that such a paper as Dr Sloan's indicated that in cases involving the determination of important medico-legal points, instead of having a number of medical witnesses pitted against each other, it would be better to have a medical commission appointed to investigate the matter and give in a report. He was sure that it would be an enormous improvement in the administration of justice in cases touching upon his own department.

Dr Sloan, in replying, said that in support of his statement that the longitudinal sinus was opened into, he had the statement of Prof. Annandale, who examined the bone, and there had undoubtedly been a great loss of blood from the wound. He was of opinion that the patient had made a perfect recovery, and that now (six months after the accident) he showed no mental symptoms whatever.

3. *Dr Dawson Turner* exhibited APPARATUS FOR STATIC ELECTRICITY, including a Wimshurst machine, an insulating stool, electrodes, etc.

Referring to Mons. d'Arsonval's experiments, he said that the static charge increased the respiratory blood changes and the metabolism of the body in the case of healthy people; in cases of disease it also acted as a sedative, patients sleeping better after it; it produced generally a tonic effect. The electrical breeze or souffle has a local cooling and anodyne effect; it will often relieve a headache or attack of neuralgia. In effect, then, it somewhat resembles the anode of a galvanic current. If sparks be drawn, a decidedly stimulating effect is produced, one that is both local and general. The method of using the apparatus, and a means of recognising the poles of the machine, was also explained. Static electricity was generally indicated in depressed conditions of the system, in atonic dyspepsia, neurasthenia, and in those recovering from lowering diseases, *e.g.*, influenza; also in insomnia and chorea. Locally static electricity was of service in paralysis and in anæsthesia (sparks drawn from the affected part), constipation (sparks drawn from the abdomen, and particularly from over the sigmoid flexure), amenorrhœa (sparks drawn from the ovarian region). Static electricity possessed advantages and disadvantages: thus it could be administered immediately, the patient had not to remove any clothing, nor had the electrodes to be moistened; its effect could be graduated and carefully watched, and unless employed in unsuitable cases it could scarcely do any harm. On the other hand, an assistant was required to work the machine, and the apparatus was not portable.

Another method of using static electricity has been described by Dr Morton, who terms it the interrupted and induced static current. This method was also explained. Muscular contractions are very easily induced, and with less pain than with the current from an induction coil. Dr Morton also claims that this current has a truly analgesic effect. In sciatica the pain often disappears instantaneously. This action may perhaps be due to the extreme rapidity of the alternation. No other form of electricity, in Dr Turner's opinion, can approach this as a stimulus to muscle and nerve.

Several members submitted themselves to the action of the instrument which he exhibited.

Dr Dawson Turner, in replying to some questions, said that he thought from this instrument they could get the most perfect electrical stimulus they had, because the shocks were so instantaneous. It far surpassed the galvanic or faradic current as a nerve stimulant. There was no danger of the patient becoming overcharged, as he became brimful at once, and the electricity was then discharged.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING II.

Wednesday, 13*th December* 1893.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. *Dr N. T. Brewis* showed—(1.) AN EXAMPLE OF SUPPOSED TUBAL GESTATION, which he had removed from a patient three weeks ago.

History.—Mrs M'K., æt. 29, married nine years, had had two children, the younger seven years ago, was admitted into Cambridge Street Home for Women on 4th November 1893, complaining of constantly recurring spasmodic pains in the right iliac region. From the birth of her last child till July of this year the patient menstruated, without pain, regularly every month, the discharge lasting a week. In August and September the periods recurred at the expected time and were painless, but the discharge on each occasion was much less than usual. A day or two after the flow in September had ceased she was seized with violent pains of a spasmodic character in the right side of the lower abdomen. The pains lasted one or two hours at a time, then they disappeared for a variable period, sometimes one or two days, but only to recur with increased severity. These pains continued at intervals till her operation. In the last week of October, exactly a month after her previous period, menstruation recurred. On this occasion she passed, along with a large quantity of clotted blood, an entire cast of the uterine cavity. On *physical examination* the vagina and the vaginal portion of the cervix were found to be soft. The uterus was slightly enlarged and displaced to the left. Through the right lateral fornix, in the position of the right Fallopian tube, an irregularly shaped semi-fluctuating mass larger than a duck's egg was felt.

From the history and the physical examination it was inferred that an extra-uterine gestation existed in the right Fallopian tube, and as the swelling felt tense, it was thought that its early removal was desirable. The abdomen was opened on November 20th. The peritoneum was thick and vascular. The omentum was adherent to the parietal peritoneum, and had to be ligatured and divided. In the abdominal cavity was a considerable quantity of dark blood and a number of clots. The bowels were matted together. The tube was adherent to bladder, uterus, and omentum by thick, vascular, soft adhesions. After freeing the tube from surrounding attachments it was ligatured close to the uterus, and the ovary and greater part of the tube removed. The fimbriated extremity was closed and curved over the ovary. The outer two-thirds of the tube were distended by a tense swelling, and along with the ovary, were adherent to the posterior surface of the broad ligament and uterus. Their separation from these parts left a broad raw bleeding surface, the oozing of which was in a great measure stopped by the application of an iron styptic. The abdomen was flushed with water, and a drainage-tube introduced. The patient recovered without a bad symptom.

This case presented a number of interesting points, one or two of which were briefly alluded to. When the abdomen was opened a quantity of dark blood was found in it, and yet the swelling was practically intact. The presence of the blood was evidently the cause of the matting of the abdominal contents. From two points on the posterior surface of the swelling a gentle oozing of blood was noticed at the time of the operation. This gradual escape of blood and its effect upon the surrounding parts was evidently an effort on the part of Nature preparatory to complete rupture, which would sooner or later take place, to confine the hæmorrhage to a limited space in the abdominal cavity. It explained also how a rupture might take place without the patient experiencing more than severe pain and faintness at the time of its occurrence.

On looking at a section of the swelling it was noted that the dilated tube was closed at its outer end and filled with coagulated blood, and that the greater part of the blood had escaped from the tube and was lying between the layers of the broad ligament. Though rupture had not taken place, it might be concluded from the specimen that if the case had been left alone rupture would have taken place into the peritoneal cavity. It therefore shows that the tube may first rupture into the broad ligament, and subsequently into the abdominal cavity.

The spasmodic colicky nature of the pains were probably due to the escape of blood and the increased distention from time to time. With regard to the nature of the swelling, there was little doubt that further examination would show that it was a case of extra-uterine gestation. The fœtus was not to be seen in the section, but it might be found after being further cut into. The absence of the fœtus, however, did not disprove gestation, as it might have been absorbed. The cast of the entire cavity of the uterus, showing well-marked decidual cells, might in itself be considered pathognomonic.

(2.) DECIDUAL CAST OF UTERINE CAVITY from the case of supposed tubal gestation above mentioned.

(3.) MICROSCOPIC SECTIONS OF DECIDUAL CASTS from two cases of extra-uterine gestation, and from one case of so-called "membranous dysmenorrhœa."

(4.) A SMALL OVARIAN TUMOUR which, before removal, presented some of the clinical features of movable kidney.

(5.) Two examples of PYOSALPINX, one of HÆMATOSALPINX, and one of CYSTIC DISEASE OF THE OVARY.

(6.) A CYST removed from the right side of the lower third of the vagina.

II. *Dr Haultain* showed a CYLLOSOMATOUS FŒTUS, with well-marked male pseudo-hermaphroditism; and also a FŒTUS on which there were well-marked signs of adhesions of the amnion, causing anencephalons and amputation of many phalanges on both hands. Several of the fingers were united together in a webbed fashion.

III. *Dr J. W. Ballantyne* exhibited—(1.) A specimen of the FŒTUS COMPRESSUS OR PAPYRACEUS, which Dr Herbert C. Male had kindly sent to him from Essex. The following were the clinical notes of the case:—The mother, a ix.-para, æt. 40, 5 ft. 3 in. in height, was of good constitution, of active and temperate habits, and was situated in favourable surroundings. She had had no serious illnesses, and was in no way deformed. Menstruation was regular in type, lasting about six days. She was married when 21. There was no affection of uterus or annexa. She had had eight previous pregnancies, two of which had resulted in the birth of twins (ten children); the labours had in many of these been normal, but twice forceps were required; and the first pair of twins and one of the second pair presented by the breech. During the present pregnancy (the ninth) she was greatly troubled with sickness, and felt more languid and ill than in any previous gestation. When about two and a half months pregnant she was seized, without known cause, by violent sickness, which lasted for twelve hours, but was not accompanied by uterine pain or discharge. She had no shock or fall during her pregnancy, and the fœtal movements were felt strongly throughout. The confinement was at the full time, and normal; a healthy, well-formed living male child was born first (it was the largest at birth of all her children), then the placenta and membranes were expelled; and on the outer surface of the latter, near to the placental border, Dr Male noticed a fatty thickening with a movable substance inside it. On making an incision into it, Dr Male found the little flattened fœtus with a small quantity of liquor amnii. The amount of liquor amnii accompanying the normal twin was moderate. The progress of the puerperium was interrupted on the ninth day by an attack of influenza, lasting for four or five days. The father was a healthy man, of good constitution and habits. With regard to the occurrence of plural births in the family history, the only case that was known was that of the father's grandmother, who had once had twins. The flattened fœtus lay in a flexed attitude in a sac on the outer surface of the membranes of the normal twin. Its sac measured 7 cms. in length by 5 cms. in breadth, and on the outer surface was a degenerated fatty-looking placental area, measuring 10 cms. by 8 cms. The thickness of the placenta was only 3 mms., and it had a yellowish colour and a firm consistence. Inside the sac the fœtus was seen with the umbilical cord wound once round its body; the face looked directly backwards over the shoulder, whilst the limbs were flexed on the anterior surface of the trunk; in its flexed attitude the fœtus measured 5·5 cms. in length by 3 cms. in breadth, and had a thickness of only 2 or 3 mms. The umbilical cord was 11 cms. long, was thin but not twisted, and was inserted near the end of the sac in which the head of the fœtus was situated. The eyes of the fœtus could be recognised as dark spots, and the ribs could be seen shining through the skin. It is quite possible, judging from the size of the fœtus, that its death and subsequent flattening may have occurred synchronously with the severe attack of vomiting between the second and third months of pregnancy.

(2.) *Photographs* of the external and internal appearances of an ANENCEPHALIC FŒTUS, which had occurred in the practice of Dr E. Coleman Moore, who had kindly furnished him with the following clinical notes:—The mother, 42 years old, a vii.-para, is slightly built but well developed, is 5 ft. 3 in. in height, and lives in comfortable circumstances. She had whooping-cough, measles, and small-pox when a child, but since then has been healthy, save for some dyspepsia. She is not deformed in any way; menstruation began when 15½ years old, is regular in type and habit, but is accompanied by considerable pain. She has always suffered more or less from leucorrhœa. She was married when 21. The present was her seventh pregnancy. Of the six previous gestations, the fourth ended in a miscarriage at the third or fourth month;

but the others went to the full time. All the children were boys, and are all alive now, aged 19, 16, 13, 6, and 3 years respectively. In all these pregnancies she enjoyed good health; but in the present one (her seventh) she was well up to the third month, and then got a severe fright (saw a neighbour with her face bruised and covered with blood), which quite upset her. Fœtal movements were felt at the four and a half months, and about that time a sharp pain began in her right side, which continued, along with indigestion, sickness, and faintness, till the confinement. About a fortnight before delivery it was noticed that the abdomen was much more distended than usual and somewhat pendulous. Her previous labours had, with one exception (forceps), all been easy and natural. In the present confinement chloroform was given as soon as it was recognised that there was some abnormality about the head. No great traction was needed, although there was some delay in the birth of the shoulders. There was an enormous amount of liquor amnii. The puerperium was normal up to the fifth day, when it was interrupted by an attack of influenza. The patient, however, recovered from this, and is now rapidly gaining strength. The placenta, cord, and membranes appeared to be normal, but were not specially examined. The father always had good health, save for an attack of rheumatic fever three years ago. The mother has one sister, who is the mother of twelve healthy children, and three brothers living, but one brother died at the age of 8 from "water in the head." The fœtus, a female, had a total length of 39 cms., whilst the head and trunk measured 24 cms. The body and limbs were well developed and normal, but the head and neck showed the usual anencephalic deformity. (Photograph shown.) There was spina bifida in the cervical region. There was a large amount of adipose tissue. There was a groove indicating the position of the neck anteriorly. The head was slightly bent towards the left side, and therefore, when a mesial vertical frozen section was made, it was found that in the upper part of the head the saw had passed to the right of the middle line through the right eye. The length of the spinal column (following the curves) was 19 cms. The section showed that all the vertebral bodies were present, but that the spines and arches of the upper five cervical were wanting (constituting the spina bifida). The cervical part of the spine curved backwards and upwards beneath the basis cranii (the vault was quite absent), and so there was a marked concavity posteriorly in the cervical region. The dorsal spine was fairly straight, but the sacrum showed a greater inclination backwards than is usual. The parts in the neck showed some displacement: the hyoid bone lay in front of, and in contact with, the upper part of the larynx, and opposite to the seventh cervical vertebra (instead of the third cervical, as is normal); the larynx was also at a much lower level than normal, lying opposite to the seventh cervical and the first and second dorsal vertebræ; the thyroid gland lay at the level of the second dorsal body, and was in contact with the upper border of the thymus gland; and the sternum, which contained one centre of ossification, had its upper border at the level of the third dorsal vertebra. The heart, however, had its usual vertical extent, lying opposite to the fifth, sixth, seventh, eighth, and upper part of the ninth dorsal vertebræ. The pylorus was at the level of the first lumbar vertebra. The cæcum, ascending and transverse colon, were enormously distended with dark-green meconium; the rest of the intestine was narrow. The other viscera seemed normal; the uterus was markedly anteverted. The spinal cord existed below the level of the sixth cervical vertebra.

IV. *The President* read a paper on NOTE OF A CASE OF DOUBLE RUPTURE OF THE MEMBRANES; also one ON AN UNUSUAL POSITION OF THE PROMONTORY MARK ON THE FŒTAL HEAD.

Prof. Simpson thought the case an interesting one from its rarity, and well worthy of being recorded. He had had an opportunity of seeing the patient and the preparation at the time, and could not understand how the double rupture of the membranes had been produced, unless there had been some displacement during the manipulations with the hydrostatic dilator. The record of this case would lead to more careful observation as to the conditions under which double rupture of the membranes may occur.

Dr Barbour replied.

V. *Dr Haultain* read his paper on DILATATION OF THE CERVIX BY CHAMPETIER DE RIBES' BAG, which will appear in a future number of this Journal.

Prof. Simpson said all the Fellows were indebted to Dr Haultain for the demonstration he had made of the value of Champetier de Ribes' dilator. He (Prof. Simpson) had sometimes been impressed by the experience of Pinard, and also of some English and American obstetricians in the use of this implement; but had somehow contented himself hitherto with the use of the more familiar hydrostatic dilators. It was clear, however, that this presents advantages which will probably lead to its displacing the Barnes' and other bags; and it was interesting to see that Dr Ellis of Bath had already got one of the new dilators constructed with modifications which were probably not so important as the modification suggested by Dr Haultain, of making the upper end concave. Whilst showing the advantages of the dilator, Dr Haultain had wisely indicated some of the drawbacks to its use.

Dr Barbour thought the difference between this dilator and that of Barnes' was that this one caused the dilatation to be produced largely by uterine contractions forcing the wedge downwards, while Barnes' actually stretched the cervix. He thought that the material of which it was made was its great advantage. He demurred, however, from the use of it or Barnes' bag for accidental hæmorrhage, as Dr Haultain had proposed. He thought the use of any instrument which plugged the cervix and concealed the bleeding was to be deprecated.

Dr Haultain replied.

VI. *Dr J. W. Ballantyne* read his paper ON INFLUENZA IN ITS RELATION TO OBSTETRICAL, GYNÆCOLOGICAL, AND PEDIATRIC CASES (which appeared at page 615 of this Journal), the discussion on which was adjourned till a future meeting.

VII. *Dr J. W. Ballantyne* gave a *résumé* of his paper ON A DESCRIPTION OF AN ANIDEAN FŒTUS, which will appear in a future number of this Journal.

ROYAL MEDICAL SOCIETY.

Dec. 15.—Dr Elder in the Chair.

Dr Macdonald read notes of a case of peculiar Abnormal Conditions affecting the Urethra and Bladder of a girl, æt. 14 years. The patient suffered from constant dribbling of urine, which condition had been present ever since she was six months of age. On examination the rectum and vagina were found to be normal, but immediately in front of the latter there was a funnel-shaped channel, into which one finger could with ease be introduced. This gradually narrowed till it entered the bladder by an aperture through which a sound could be passed. Immediately in front of this sinus was a channel which appeared to be the urethra. Superiorly it entered the bladder by a small aperture which seemed to possess a sphincter. Thence it passed downwards for about an inch, and bifurcating, opened externally as two distinct meatuses, the one in front of the other. The operative treatment adopted in the case was division of the septum between the bifurcations of the urethra, and closure of the lower half of the large channel anterior to the vagina. The patient recovered, cured of the incontinence of urine.

Mr J. P. Stewart suggested, to account for the condition, that in fœtal life there had been an attempt made to form three bladders by three distinct buds from the sinus uro-genitalis.

The President and Dr Giles explained the normal development of the structures involved.

Dr Watson and Messrs Montserrat and Bowes asked a few questions regarding the treatment.

Dr D. C. Watson gave a Qualifying Communication upon certain interesting points in Physical Diagnosis. The subject was considered under two headings, viz.:—1. Certain of the less noted but remarkable physical signs found in disease of the thoracic and abdominal viscera. He considered chiefly the differences in width of the upper and lower intercostal spaces, and the difference in degree of the abdominal angle, and width of abdominal space found in various thoracic and abdominal diseases. 2. Certain physical signs and sensory symptoms associated with visceral disease, such as spinal tenderness and localized areas of hyperæsthesia and paresis. Several cases under his care in the Royal Infirmary were cited as illustrative examples.

Dr Giles, in moving a vote of thanks, spoke of the connexion of segments of the skin with parts of the spinal cord, and referred to Head's paper on the subject.

Dr Orr took exception to the term "dry crepitations" used by Dr Watson, and spoke of various reflex pains.

Mr J. P. Stewart asked Dr Watson if he could explain the sensation known as "setting the teeth on edge," produced by the creaking of rusty locks, etc.

The communication was accepted by the Society.

Dr T. F. Macdonald read his Dissertation upon Operations on the Uterine Appendages. After briefly mentioning the leading operations included under the term, he confined his attention to the operation of ovariotomy. This was fully treated of under the headings of—1. History; 2. Advisability or Contra-indications; 3. Mode of Operation; 4. Results.

Dr Watson, in moving a vote of thanks, said that if there were any fault to find with the dissertation, it was that perhaps it treated too much of technical details.

Dr Orr complimented Dr Macdonald on the paper, and spoke of several points in the after-treatment of abdominal operation cases.

Drs Pringle and Giles asked a few questions.

Mr J. P. Stewart and Dr C. C. Easterbrook spoke of the ease with which African women recover from operative measures.

The Society accepted the dissertation.

Jan. 12.—Dr Elder in the Chair.

Dr Bremner read notes of a case of Ligature of the Internal Iliac Artery. The patient had sustained a severe wound of the left buttock, from the explosion of a blasting cartridge, three weeks before admission to hospital. A false aneurism of the gluteal artery formed in the wound, and gave rise to several copious hæmorrhages. The day after the patient's admission to the Royal Infirmary, Mr Annandale endeavoured to reach and secure the bleeding point by enlarging the original wound. This was unsuccessful, and Mr Annandale next made an incision along the left linea semilunaris, exposed the bifurcation of the left common iliac artery, and ligatured the internal iliac. This entirely arrested the hæmorrhage. The operation was performed on 17th November, and since then the patient has made an uninterrupted recovery. He was shown to the Society by Dr Bremner; and, though presenting a slight halt in his gait, appeared to be quite well.

Dr T. C. Guthrie moved a vote of thanks, and said that this was the first time in which the internal iliac artery had been successfully ligatured in Edinburgh.[1]

Dr C. C. Easterbrook and Mr J. P. Stewart also spoke, the latter remarking that the patient would now be a capital subject for the operation of left lateral lithotomy, as the internal pudic artery would be altered in size or obliterated.

Dr Fred. Mackay read notes of a case of Purulent Meningitis in a woman æt. 65, following removal of the right eyeball for purulent inflammation. He also showed specimens of the brain, contents of the right orbit, and the left temporal bone from the case. The petrous temporal bone near the internal auditory meatus and the mastoid cells showed tubercular disease. The meningitis affected mainly the cerebellum and vertex of the brain, —the inferior frontal region and the optic chiasma being healthy. Accordingly, it was difficult to determine whether the meningitis was caused by the tubercular affection of the temporal bone or by the septic condition of the right eyeball, the latter condition being considered by Dr Mackay to be the cause.

Dr Murray Leslie gave notes of the post-mortem examination. He said that there was marked purulent meningitis below the dura, but no disease in the optic nerves and no pus in the orbit or frontal lobes; considerable meningitis at the base of the brain, and two purulent areas at each side of the cerebellum. He considered that the meningitis was secondary to the left middle-ear disease, though clinically it seemed to follow the purulent condition of the right eyeball.

Dr Orr thought either of the conditions might have started the meningitis, but probably the eye lesion was the actual cause.

Mr Greig, Dr Crerar, the President, and Dr Guthrie also entered into the discussion, and thought that the balance of evidence was in favour of cario-necrosis of the left temporal bone being the cause of the meningitis.

Dr John Orr delivered his Dissertation on Tumours of the Eyeball and Orbit. In the course of his paper he dealt with the importance of the study of these eye diseases, owing to the early recognition of them leading to their satisfactory removal, and, in the case of malignant growths, giving very good results as regards the ultimate prognosis. Dr Orr's paper was for the most part of a clinical nature, several cases being cited in detail to exemplify the diseases described. Several pathological specimens and beautifully prepared microscopical preparations were shown, illustrating several varieties and sites of origin of intra-ocular sarcoma. These Dr Orr presented to the Society.

Dr Mackay highly complimented Dr Orr on his dissertation, particularly referring to its great clinical value.

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[1] (Quite a mistake. Syme tied it successfully May 15, 1890—*Observations in Clinical Surgery*, 1861, p. 165.—Ed. *E. M. Jl.*).

Dr Guthrie thought that perhaps the paper might with advantage have been broken into two.

Mr M'Dougall thanked Dr Orr for the specimens he had presented to the Society.

Dr Giles and Dr Murray Leslie thought that the paper would have been spoiled by being broken into two; and the latter remarked that it was a model of clearness, and very easily understood.

Mr J. P. Stewart asked a few questions about a case of blindness he had seen in dispensary practice.

The Society accepted the dissertation.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

DIURETIN.—Dr Massalongo and Dr A. Silvestri, in the *Riforma Medica*, No. 58, March 1893, as a result of a large number of experiments, come to the conclusion "That diuretin is a diuretic and not a cardiokinetic in the true sense of the word; that it acts by stimulating the renal parenchyma and renal cells, as is seen from the fact that this drug increases the quantity of urine even when the myocardium no longer responds to the action of cardiac remedies. However, we cannot, like some authors, exactly deny that diuretin has any direct action on the heart, whereby the tone is improved and systole is strengthened, for we must keep in view the analogy between caffeine and theobromine, and also the not infrequent improvement observed in some patients using it during the early periods of cardiac insufficiency, when œdema had not yet appeared. It is, however, beyond question that diuretin in a general way does not increase the blood-pressure primarily, but indirectly with the increase of diuresis and the disappearance of œdema. The diuretic action of this remedy is most marked in the dropsy of cardiac and renal sufferers. It has a feeble, perhaps negative, action in dropsy due to hepatic cirrhosis, in pleural exudation, and in other effusions of inflammatory origin. The diuretic action is continued even after ceasing to take the remedy, and this is due entirely to the liberation of the heart from the peripheral obstacles due to the œdema. As a rule, it is only after increase of diuresis in patients with cardiac dropsy that the pulse becomes regular, and the heart is indirectly strengthened. Diuretin has never produced in ordinary doses of 4, 5, or 6 grammes any inconveniences, neither albuminuria (which, if it is present, is either diminished or arrested) nor diarrhœa or vomiting; it has no cumulative action. The diuretic action of diuretin is due to the theobromine (methyl caffeine); the salicylate of soda is probably only a means of facilitating the solubility and absorption. We believe, however, that this salt, which enters in some considerable quantity into the composition of the drug (about half), plays some further part in the beneficial effects obtained, acting as an antiseptic and antitoxic against the symptoms of auto-intoxication so frequent in cardiac patients (dyspnœa, vomiting, delirium, etc.). The salicylate of soda and theobromine in the early stages of asystole has a very limited action, undoubtedly inferior to digitalis, strophanthus, convallaria, etc. It is in the last stages of asystole (œdema and anasarca) that its beneficial effects are more often shown, when the most powerful cardiac tonics are useless when the heart muscle is degenerated. It then acts, as we have seen, by influencing the kidney and exciting its function. Of all the forms of cardiac disease, it acts most energetically in mitral lesions, less in aortic disease, and less still when to one or other is joined diffuse atheroma of the peripheral arterial system. Of the forms of renal affection it acts most satisfactorily in acute nephritis, somewhat less so in chronic nephritis. The diuretic effects of diuretin become manifest even after twelve, fourteen, or twenty-four hours. The best mode of administration is a solution in warm water. Our prescription was as follows:—℞ Diuretin, 4 to 6 grammes; Warm water, 130 grammes; Syrup of peppermint, 20 grammes. We conclude by saying that salicylate of soda and theobromine is an excellent diuretic, perhaps the best known to therapeutics, and for this cause it has justly merited the name of 'Diuretin.'"

IODRUBIDIUM.—Leo Leistikow (*Monatsh. f. prakt. Dermatologie*, No. 10, 1893) describes his experience with iodrubidium, a substance resembling iodide of potassium in being odourless, somewhat bitter and saline in taste, easily soluble, and stable in composition. It was used as a 5 per cent. aqueous solution, of which three tablespoonfuls were given daily to eight patients, six of whom suffered from various tertiary syphilitic lesions. In one of these treatment had to be suspended owing to the appearance of conjunctivitis. The remaining cases were—(*a*) acute gonorrhœal polyarthritis, and (*b*) a gumma of the tongue; in this case coryza, produced by iodide of potassium, disappeared under the new treatment. All cases, with the one exception referred to, were apparently completely cured in from two to four weeks. No gastric disturbances were caused, and the drug was well borne by a patient suffering from valvular disease.—*British Medical Journal*, January 13th, 1894.

EUROPHEN.—Gilbert (*Separatabdruck Balneologiseh. Centralbl.*, II., 13) statest hat, as a sceptic, he resolved to test the claims of europhen to replace iodoform. He used it as a 1 to 5 per cent. ointment, which prevents its forming into troublesome scales. His cases comprised varicose and other ulcers, scrofuloderma, a severe burn, and wounds causing loss of substance. The cases of varicose ulcer were very advanced, and under alternate treatment with the dry powder and a 2 per cent. ointment, a cure was effected in about three weeks. In the case of scrofuloderma numerous deep ulcers existed around the neck and the angles of the lower jaw. These, where practicable, were incised, and treated in the same way, the ulcers healing in a few weeks, though they had previously remained unaffected by iodoform, nitrate of silver, etc. In conclusion, the author strongly recommends further trials with europhen, which, moreover, has not been found to possess any marked poisonous properties, and he advocates the alternate use of the powder and the ointment, this method having given the best results in his cases. —*British Medical Journal*, January 13, 1894.

LOSOPHAN.—Dr J. V. Shoemaker says losophan is the name of a compound the activity of which depends upon the iodine entering into its composition. Losophan contains 80 per cent. of iodine, and presents itself in the form of white needles, which melt at 250°·7 F. It is insoluble in water, slightly soluble in alcohol, but dissolves readily in ether, chloroform, benzol, and at a temperature above 140° F. in fixed oils. Losophan is an irritant substance, and its action needs therefore to be closely watched. For this reason, moreover, it is not adapted to the treatment of acute diseases of the skin. In a number of chronic affections, however, its use has been followed by excellent results. In old cases of eczema attended with considerable thickening of the integument and distressing itching, losophan has proved of service. It stimulates the absorbent vessels to remove the infiltrate, and at the same time it relieves the itching. The latter symptom is, in other diseases, also allayed by the application of the same remedy. It may be employed, therefore, in cases of paræsthesia, prurigo, urticaria, etc. Losophan is of value in the squamous form of eczema, where the skin is red, dry, infiltrated, and scaly. Fissured eczema, a rebellious and painful form of the disease, is benefited by the application of losophan. The congestion and thickening of the surface are gradually lessened, and the cracks begin to heal. In the later period of sycosis, when the papules and pustules are numerous and may have coalesced into a mass, when the skin is swollen and thickened, losophan may be used with success. The subjective symptoms are ameliorated, inflammatory congestion subsides, and the infiltration is removed. The chronic forms of acne, especially the pustular and indurated, may be cured, in process of time, by the persevering use of losophan. The same remark is true of the second stage of rosacea. The irritant properties of losophan render it of avail in certain parasitic affections. It has, in some cases, proved curative in pediculosis and scabies; but has been more generally successful in the treatment of the various forms of tinea, trichophytina, or ringworm. Losophan has been used in the form of a lotion or an ointment. Dr Edmund Saalfield, of Berlin, to whom we owe the first clinical investigations of this substance, found, as the results of his experiments, that the most generally suitable lotion consists of 11 per cent. solution of losophan in three parts of alcohol with one part of water. As an ointment it may be employed in the strength of 1 to 8 per cent. (*Medical Bulletin*, September 1893).—*The Charlotte Medical Journal*, November 1893.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

Expulsion of the Amniotic Sac separate from the Chorion.—Dr Cosentino reports three cases of abortion in which the amniotic sac was expelled separate from the chorion, an occurrence which has also been noted by Velpeau, Smellie, and Krukenberg. In the first case the patient, a healthy vi.-parous woman of 34 years of age, began to abort at the third month of pregnancy. She first expelled the amniotic sac, then twenty minutes later the chorion, and finally some hours afterwards the maternal deciduæ came away. The amniotic sac had the size and appearance of a hen's egg, and weighed 26 grammes. The amniotic fluid was quite limpid and transparent, and contained neither albumen nor urea. The contained fœtus, a male, was 54 mms. in length, weighed 18 grammes, and was well developed; its cord, 27 mms. in length, was inserted into an ovoid depression in the amnion. The amnion itself was thicker and more resistant than usual. It was lined internally by nucleated pavement epithelial cells with granular contents; externally there was a layer of large flat polyhedral cells with granular nuclei and protoplasm; and between the two was a connective tissue layer. The chorion weighed 47 grammes, and had a smooth interior bathed in serous fluid, and showing no trace of the insertion of the umbilical cord; its whole surface was covered by villi. The thickness of the amnion, and the presence of fluid between it and the chorion, were the probable causes of the separate expulsion of the former. The second specimen came from a young i.-para; she had her last menstruation at the end of December, and aborted on the 6th of February. The amniotic sac, which came away alone and intact, was the size of a *goose's* egg, and weighed 44 grammes. The fœtus, however, was only 1 cm. in length, and corresponded in size and development to the age of the pregnancy (one month), whilst the amniotic sac had the size it usually attains at the third month. The liquor amnii was less limpid than in the former case, was odourless, had an alkaline reaction, and contained some albumen but no urea. The amnion had been separated from the chorion by the great distention of the former. There was hydramnios, therefore, at the early age of one month. The third case also showed an amniotic sac, expelled separately, with some traces of villi on its surface. It weighed

5·27 grammes, and contained an alkaline serous fluid which deposited flakes of albumen. There was no trace of a fœtus. The hæmorrhage which had taken place between the chorion and decidua may have caused the death and absorption of the embryo. The pregnancy was probably at the sixth week when miscarriage occurred. Dr Cosentino also relates three cases of sub-chorionic hæmatoma of the decidua.—*Annali di Ostetricia e Ginecologia*, No. 6, 1893.

INTRA-UTERINE FRACTURE OF THE TIBIA.—Dr P. Caviglia puts on record an interesting case of fracture of the tibia in the fœtus. The mother, a healthy iii.-para of 26 years of age, received at the fifth month of pregnancy a blow on the abdomen. For that day and the two succeeding she felt no fœtal movements, but these returned on the third day after the accident. She was confined at the ninth month. The infant, a female, weighed 3350 grammes, and measured 49 cms. in length. The skeleton was normal save in the right lower extremity, the leg being bent at an angle, and the foot being in a position of equino-varus. There was no trace of a fibula, and the tibia showed a fracture. Over the site of fracture was a cutaneous cicatrix. The fifth digit of the foot was represented by a small node adhering to the metatarsus by a pedicle. The affected leg was somewhat smaller than the other. Caviglia thinks that there was an arrest in the development of the fibula, due to fracture of the tibia. Linear osteotomy and tenotomy were performed twelve days after birth, with improvement in the state of the limb.—*Annali di Ostetricia e Ginecologia*, August 1893.

A CASE OF HERMAPHRODITISM.—Dr G. Bergonzoli narrates a case of feminine hermaphroditism. The individual, 32 years of age, was the third born of three brothers, of whom the first two had died when young, but had shown the same abnormal state of the genitals. There was a beard on the face, the neck was short and thick, the thorax had a masculine appearance, the breasts were small but fatty ; there were no hairs on the chest, but these existed on the arms ; the pelvis was masculine, as was the arrangement of the pubic hair. There was a vulva with little marked labia majora, and a small penis measuring 6 cms. in length when in a state of flaccidity. The meatus urinarius opened below the penis in the median raphe, and was surrounded by the male vestibular band of Pozzi. The labia minora were small, and in the vagina was felt an atrophic cervix uteri. No uterine body was to be made out, nor glands in the groins. The individual menstruated regularly from the age of eighteen. The voice was masculine in its characters. The being was brought up as a woman, and there is some reason for believing that pregnancy twice occurred, but ended in early abortion (?). Bergonzoli considers the case one of feminine pseudo-hermaphroditism (external), or gynandry.—*Bollettino Scientifico*, No. 1, 1893.

THE EFFECTS OF KNOTS OF THE UMBILICAL CORD ON THE FŒTAL CIRCULATION.—Dr R. Lefour has made some interesting experiments on the influence which knots on the cord have on the fœtus. He comes to the conclusion that Cazeaux's statement that they never bring about the death of the fœtus cannot be accepted. In the majority of cases, however, they have, thanks to the energy of the heart, no noteworthy influence on fœtal vitality. It is more likely that a fatal result will be brought about if the influence of the knot is increased by that of compression exercised upon it. Death may be due either to simple mechanical obstruction in the funicular circulation or to a thrombosis following this vascular alteration.—*Archives Cliniques de Bordeaux*, August 1893.

OCCASIONAL SURGICAL PERISCOPE.

By ALEXIS THOMSON, M.D., F.R.C.S.E.

ON A SIMPLE METHOD OF TREATING THE WOUND AFTER EXCISING HÆMORRHOIDS.—Mr Robert Jones of Liverpool, in the *Provincial Medical Journal* for August 1st, 1893, recommends that in those cases of hæmorrhoids which are suited for treatment with the clamp and cautery, that the latter instrument be dispensed with. The hæmorrhoid is placed within the clamp and cut off, leaving about an eighth of inch of pedicle. This cut edge is sewed with a continuous catgut suture, the clamp removed, and the operation is complete. He does not intend to use the cautery again, except in the case of friable granular hæmorrhoids.

ATYPICAL FORMS OF RENAL TUBERCULOSIS.—M. Tuffier, in the *Annales des Maladies des Organes Génito-Urinaires* for July 1893, refers to a series of cases of tubercular kidney in which the commonly recognised symptoms of the disease were absent. Among others, he describes a *painful form* in which there is repeated renal colic without the passage of gravel, and without other physical signs,—*i.e.*, there is no increase in the size of the organ, no tenderness, and no bladder symptoms. In a case of this nature in which he operated he found the ureter and pelvis normal, while the kidney itself was studded with tubercle. He also describes a *hæmorrhagic form* in which there is no increase in size, no pus or bacilli in the urine. The patient passed (without colic) urine which was black with blood, sometimes for a fortnight on end. The affected kidney was only discovered by the cystoscope; he was able to observe intermittent jets of blood from the left ureter. The kidney was removed, after exploration, by the lumbar method, and was found to contain abscesses, which did not communicate with the pelvis, and the pus from which yielded definite results on inoculation.

OPERATIVE TREATMENT OF VARICOSE VEINS.—Dr Laplace, in the *Philadelphia Medical and Surgical Reporter* for July 8th, 1893, recommends the ligation of the long saphenous vein at the saphenous opening, and of the short saphenous vein between the heads of the gastrocnemius. The patient is kept in bed for two or three weeks, with the limb elevated and wrapped in cotton-wool. He reports seventeen cases, in six of which the operation was bilateral. Cocaine anæsthesia was employed.

INCONTINENCE OF URINE FROM THE URETER OPENING EXTERNALLY.—At the Société de Chirurgie, May 1893, M. Bois presented a case of incontinence of urine in a young woman, resulting from the left ureter opening externally to the left of the urethral orifice; a stylet introduced penetrated for a considerable distance, and seemed to show that the ureter did not communicate with the bladder. He proposed to remedy the condition by making a communication between the ureter and the bladder, keeping this open by the daily passage of a sound and closing of the external orifice.

RIDER'S BURSA: HYGROMA DES CAVALIERS.—MM. Le Fort et Albert, in the *Revue de Chirurgie* for July 1893, describe this affection. In those who ride a great deal there is developed on the inner side of the knee a subcutaneous serous bursa which facilitates the movements against the saddle. It is liable to inflame, and may suppurate. The seat of the bursa is not fixed; more commonly it is developed over the internal condyle of the femur, and in part over the corresponding tuberosity of the tibia; it is adherent to the skin, and is movable on the subjacent bone. The swelling is prominent when the knee is extended, and diminishes greatly on flexion. It only communicates with the joint in exceptional cases.

ANGER'S METHOD OF OPERATING FOR INGROWING TOE-NAIL.—Mr Charles N. Wood, in the *Medical Record* for September 2nd, 1893, reports twenty-three cases in which he has operated by this method. The essential feature in the operation is the removal of that portion of the matrix from which the lateral, troublesome portion of the nail grows. The matrix is to be distinguished from the bed of the nail, as it is only when the former is removed that the growth of the nail ceases. It is important, therefore, to cut well back, nearly as far as the joint. After removal, the edges of the gap are drawn together with sutures. A bit of rubber tubing was tied round the base of the toe, and cocaine was used as a local anæsthetic. The patients were allowed to go about as usual the day following the operation.

THE FATE OF THIERSCH SKIN-GRAFTS.—When a wound has been successfully grafted after the method of Thiersch, healing occurs without the formation of granulations, and with scarcely any cicatricial contraction. After a few months the new skin is reddish and somewhat glistening, it is on the same level as the surrounding skin, it is more or less movable on its bed, and it frequently possesses both tactile and thermal sensibility. When the changes in the grafts are examined in detail, it is found that in the first instance there is some desquamation of the horny layer, while at the same time there is active proliferation in the middle layers of the epidermis; ultimately the epidermis as a whole is thin, and the papillæ are of small size. An entirely new vascular network is formed beneath the epidermis, which nourishes the latter, and which persists for years, and which accounts for the redder tinge of the new epidermis, and differentiates it from the surrounding skin. The grafted skin reaches the level of the surrounding skin surface more rapidly when the grafts are placed on a vascular bed; in the forehead this level has been attained in four to six weeks. It fails to attain this level when the grafts are placed on a granulating surface; as in the latter case, there will be cicatricial tissue beneath the new skin. After an interval of months, the mobility of the grafted skin is so developed that it can be lifted up in folds from the tissues beneath. Return of sensibility occurs sooner at the margins than at the centre of the grafted area, and where large gaps have been filled up it may not return at all. In discussing the anatomical basis of the above clinical facts, the writer points out that the normal mobility of the skin on the subjacent tissues depends on the network of elastic fibres which connect the former with the latter; by adopting a special stain for the elastic fibres, he was able to prove that these were abundantly formed in the true skin beneath the grafts, and that they were prolonged right up to and into the papillæ, so as to end immediately beneath the epidermis. The presence of these new elastic fibres, derived from the mother tissue, gives the grafted skin greater resisting power, so that it is able to withstand traction and pressure. Inasmuch as granulating and cicatricial processes hinder or prevent this growth of elastic fibres into the graft, we are able to understand why the results obtained are so much better when the grafts are placed on a recent wound than on one which is granulating. It is also to be noted that the development of the elastic network explains the absence of cicatricial shrinking of the transplanted skin. The new vessels which are formed from the mother tissue have a great influence in raising the grafted area to the level of the surrounding skin; in this they are assisted by the formation of elastic fibres, and of young connective tissue. In a successful case there is no scar tissue to be seen. The return of sensibility to touch, pain, and temperature is explained by the formation of new medullated nerve fibres, which are probably also derived from the mother tissue, and which the author has traced into the grafted skin. Finally, this method of grafting succeeds at all ages, and that to an equal degree.—Edwin E. Goldmann, *Beiträge zur Klinischen Chirurgie*, 1893.

Part Fifth.

MEDICAL NEWS.

ROYAL COLLEGE OF PHYSICIANS, EDINBURGH.—James Alexander Cockburn Grant, Gravenhurst, Ontario, and Henry Charles Schomberg Elliot, Gravenhurst, Ontario, passed the Final Examination for the Degree in Medicine in December last, and were admitted L. R.C.P. Ed.

ELEVENTH INTERNATIONAL MEDICAL CONGRESS, TO BE HELD IN ROME FROM MARCH 29TH TO APRIL 5TH.—Messrs Thos. Cook & Son, of Ludgate Circus, London, have been appointed the official agents for travelling arrangements for the Congress, and they have made arrangements for special cheap return tickets to Rome for members of the medical profession and friends attending the meetings. At the request of the Central Committee they have also arranged to reserve hotel accommodation in Rome for delegates and friends at rates varying from 10s. to 20s. per day, or higher if superior apartments are required.

The fact of the Congress being held immediately after Easter renders it difficult to guarantee accommodation at hotels, and Messrs Thos. Cook & Son will not guarantee to provide the same unless they receive application on or before February 15th, stating the number of days for which accommodation will be required, the number of rooms and beds desired, and the approximate rate per day that will be paid. They will, however, do their best to meet the wishes of those delegates who cannot give their decision prior to that date.

They have also issued a special programme of a select conducted party to leave London on Tuesday, March 27th, travelling *viâ* Dover, Calais, Paris, and Turin, to Rome, spending eight days in that city, and returning by the same route, and spending Sunday, April 7th, in Genoa, at a specially low and inclusive rate to delegates of £16, 5s., providing for all travelling tickets, meals *en route*, and for the eight days' stay in Rome.

In addition to the above arrangements, a programme has been drawn up of conducted tours for visiting Sicily, Naples, Vesuvius, Pompeii, Capri, Sorrento, etc., etc., and for three days' excursions in Rome under the leadership of Dr Russell Forbes, the Archæological and Historical Lecturer on Roman Antiquities.

MESSRS BURROUGHS, WELLCOME, & CO. have sent us samples of the following *Compressed Drugs*:—1. "Soloids" of Corrosive Sublimate for disinfecting purposes. The proper strength is two soloids to a quart of water. 2. "Tabloids" of compressed compound Cubebs, each containing Cubebæ 2 grs., Ammon. Chlorid. ½ gr., with licorice base. 3. "Soloids" of Iodic Hydrarg., 1 gr. 4. "Tabloids" of Iodic Hydrarg., ⅙ gr., for internal use. 5. Soda Mint "Granules," a combination of the bicarbonate of soda with peppermint. 6. "Tabloids" of Antipyrin, 2½ grs., sugar-coated. 7. Dermatol "Tabloids," 5 grs. 8. Alumnol "Tabloids," 4 grs. 9. Iodopyrin "Tabloids," 5 grs. Iodopyrin is antipyrin in which one atom of H has been replaced by one of I. 10. Benzosol "Tabloids," 5 grs. 11. Sulphonal "Tabloids," 5 grs. 12. Agathin "Tabloids," 4 grs. These preparations of compressed drugs will be found very convenient for general use. The drugs are valuable and are very much used, and we can highly recommend these preparations as at once most convenient and perfectly reliable.

"CARLSBAD POWDER."—We have received from Messrs S. KUTNOW & Co., London, a sample of their Improved Effervescent Carlsbad Powder. It is an excellent preparation, and one we can highly recommend. The disagreeable taste of the sulphate of sodium is well disguised, and the preparation is not unpleasant to the taste.

CONDENSED MILK, ETC.—We have received from the ANGLO-SWISS CONDENSED MILK Co. specimens of Condensed Milk, Cream, Coffee, Chocolate, and Cocoa. The three last contain cream and sugar, and require only to be dissolved in water to be ready for use. More sugar can be added if necessary. These are excellent preparations, and only require to be better known to be more extensively used.

OBITUARY.

MATTHEW JAMES TURNBULL, M.D., F.R.C.S. Ed.

IT is our melancholy duty to record the death of this well-known and eminent Border practitioner, who on the 10th of January last succumbed, somewhat rapidly in the end, to a protracted period of failing health. Dr Turnbull's career as a medical man had been a long and a very successful one. Born in Coldstream sixty-eight years ago—where his father, who had commenced his profession in Dunbar, was also a medical practitioner—he took his degree of M.D. at the University of Edinburgh in 1846, having previously, in 1845, obtained the Diploma of the Royal College of Surgeons, of which he became a Fellow in 1884. His practice was a large and remunerative one, and was ever increasing up to the time—not very many years ago—when he found himself no longer so able for its active duties, and almost altogether retired from them in favour of his partners, Drs Henderson and Dobie, under whose able and skilful care it was very soon still further extended. The district in which his work was carried on was one much superior to the generality of those falling to the lot of the ordinary country practitioner; a large proportion of his patients consisted of the old-standing and wealthy landed proprietors of this portion of the Border, and the large and well-to-do tenant farmers for which that part of the country is so distinguished. With all of these he was not only the doctor but the intimate and valued friend, and he used to express the gratification he felt at that courtesy he had met with, which placed the mere country practitioner very much on an equality with his affluent *clientèle*. He was a man fond of and given to hospitality. His entertainments were always regarded as something to be remembered. His dinners and the good things provided on such occasions were proverbial for their display, of which he was rather proud; and he had the tact of ascertaining the tastes and the preferences, the likes and the dislikes, of his guests, and making them always feel at home. He was for some years back a member of the Medico-Chirurgical Club of Edinburgh, whose symposia he thoroughly appreciated; he was also a member, and in 1872 President, of the Harveian Society, at which, on April 20 of that year, being the ninetieth festival of the Society, he delivered the usual address, his subject being "Some of the most Celebrated Border Surgeons." He was by no means a voluminous writer on medical subjects; and perhaps the most notable of his contributions of this kind was a paper read before the Medico-Chirurgical Society in 1877 on an interesting "Case of Lead Poisoning" consequent upon the accidental swallowing of a lead bullet. Dr Turnbull had for many years himself suffered from obesity, and to this subject, and the methods for its reduction, he had latterly given much attention. In June 1889 he weighed no less than 22 stones, when he consulted Dr George W. Balfour, and under a restricted regimen and rigorous system of treatment his weight in 1890 had become reduced to 15½ stones. He had some cases of the same nature under his own care which were equally satisfactory; and an interesting account of his condition and its amelioration was published in the *Edinburgh Medical Journal* for December 1890 by Dr W. Allan Jamieson, F.R.C.P.Ed.

Dr Turnbull was at one time Medical Officer under the Berwick Board of Guardians. He had been for some years Chief Magistrate for Coldstream, and represented that parish on the middle district of the County Council of Berwickshire. He was also a Justice of the Peace, a member of the Berwickshire Naturalists' Club, a Fellow of the Obstetrical Society of Edinburgh, and Surgeon to the Coldstream Dispensary.

Dr Turnbull was three times married; none of his wives had any family, and they all predeceased him. His first marriage was with Miss Janet E. Bedford in June 1854, his next was with Miss Sophia Oliver in 1862, and his last with Miss Jane Robertson in 1885, who died shortly afterwards. Dr Turnbull left no near relatives. He was a keen and successful angler, almost exclusively with worm, as he held fly fishing in something like contempt. He was noted for his love of punctuality, especially in the case of his dinner invitations and the like, as his friends soon learned to know. His last illness extended over a considerable period, and was of a somewhat complicated nature, during which he had been attended by Drs G. W. Balfour and Joseph Bell. He had been more than once operated on for fistula, and had suffered from marked cardiac, and latterly from renal symptoms. He was an ardent admirer of the Medical Faculty of Edinburgh, especially the Professors of his old student days; and of late was very keen that some memorial should be erected in Edinburgh to the memory of Professor Alison. His "buirdly" figure was well known all over the Borders, and he was altogether a character who will be very generally missed and not easily replaced.

THE LATE DR E. F. SCOUGAL.

EDWARD FOWLER SCOUGAL, M.A. Aberdeen, M.D., C.M. Edin., died at his residence in Huddersfield on Sunday, January 14, 1894, at the early age of 38. The termination of this most promising career was due to carcinoma of the stomach; the whole organ was found to have contracted into a hard cancerous mass. He had been laid aside from active work for many months, but he bore his sufferings with heroic fortitude. So late as December 19, 1893, he rose from a sick-bed in order to be present at the Annual Dinner of the Huddersfield Medical Society, of which he was Secretary.

The men of his own time in Edinburgh will remember Edward Scougal as one of the very best all-round men of his time. An excellent student, he was also an expert cricketer and good athlete. Full of fun and humour, with almost rollicking sense of the sunny side of things, he never exceeded the line between fun and folly, and in all matters of principle was an example to his fellows. Absolutely free from goody-goodyness, his stern sense of what was right made him a power for good among the students. He was a strong advocate of abstinence from alcohol, and in this his example was a great help to weaker brethren, for no one could accuse Scougal of being a fanatic or a milksop. His special taste was to surgery, and a better dresser, clerk, and house-surgeon no one could wish for (*experto crede*). He loved his work, and his nurses and patients alike testified to his success in it. He was well up in his ophthalmic work, and so late as May 1893 he published an interesting case in Vol. XIII. of the *Transactions of the Ophthalmological Society*. The Royal Medical Society's rooms knew him well. He served the Society loyally, both as Member of Council and Secretary, and in turn was honoured by being made one of its Presidents. To be President of the Royal Medical Society is a high honour, and means a great deal; the clear eyes of youth can select their heroes right well, and hardly ever does a President of the Royal Medical disgrace the choice of his peers. Scougal made an admirable practitioner, first at Lydgate, Newmill, and then at Huddersfield. The large number of medical men and of representatives of public bodies who attended his funeral testified to the respect and affection felt for him. Dr Scougal was the sixth son of the late Mr James Scougal, one of Her Majesty's Inspectors of Schools for Scotland, and came from a home characterized by culture and affection. He left three little children.

THE LATE DR LESLIE OF FALKIRK.

George Leslie, who died very suddenly at his residence in Falkirk on the 20th of January, was a man of considerable talent and originality. After graduating, with honours, M.B. C.M. at Edinburgh in 1881, he became assistant to Dr Maclaren at Larbert Asylum, and in 1882 took up the practice of Dr Hamilton of Falkirk, whose daughter he married. Since then he has worked hard at his profession in Falkirk and Stirlingshire. He was much loved by his patients, had a very large practice, and will be much missed by poor and rich, as he was most unselfish and kind to the poorest of his patients. He held several public appointments, being Medical Officer to the Plean Asylum and also to the Institution for Imbecile Children at Larbert. He was a skilled student in Comparative Anatomy, of which science he was for a time Senior Demonstrator in the University of Edinburgh. He also worked on the "Challenger" Commission, and, in connexion with Professor Herdman, contributed a valuable paper on the "Intervertebrate Fauna of the Firth of Forth."

He has also contributed valuable papers to this Journal on Hereditary Transmission of Disease and on the Treatment of Neuralgia.

The sudden death of his wife in 1893 was a severe shock. He is survived by two sons.

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William Anderson, F.R.C.S.,—Heath's Practical Anatomy: A Manual of Dissections. Eighth Edition. J. & A. Churchill, London, 1893.

Emil Behnke,—Stammering: Its Nature and Treatment. Fourth Edition. T. Fisher Unwin, London, 1893.

Robert Boxall, M.D. Cantab., etc.,—Antiseptics in Midwifery. H. K. Lewis, London, 1894.

James Braithwaite, M.D. Lond., — The Retrospect of Medicine. Simpkin, Marshall, Hamilton, Kent, & Co., London, 1894.

Harry Campbell, M.D., etc.,—Headache and other Morbid Cephalic Sensations. H. K. Lewis, London, 1894.

Charles W. Cathcart,—Descriptive Catalogue of the Anatomical and Pathological Specimens in the Museum of the Royal College of Surgeons of Edinburgh. James Thin, Edinburgh, 1893.

W. M. L. Coplin, M.D., and D. Bevan, M.D.,—A Manual of Practical Hygiene. P. Blakiston, Son, & Co., Philadelphia, 1893.

Charles L. Dana, A.M., M.D.,—Text-Book of Nervous Diseases. Second Edition. William Wood & Co., New York, 1893.

Prof. Ch. Debierre,—La Moelle Épinière et l'Encéphale. Félix Alcan, Éditeur, Paris, 1894.

Archibald Donald, M.A., M.D., etc.,—An Introduction to Midwifery. Charles Griffin & Co., London, 1894.

Sir Dyce Duckworth, M.D., LL.D.,—Women; their probable Place and Prospects in the Twentieth Century. James Maclehose & Sons, Glasgow, 1894.

Surgeon-Major A. S. Faulkner,—A Guide to the Public Medical Service. H. K. Lewis, London, 1893.

Arthur Gamgee, M.D., etc.,—A Text-Book of the Physiological Chemistry of the Animal Body. Macmillan & Co., London, 1893.

C. G. Gümpel,—Spinal Curvature—Description of a New Form of Apparatus. London, 1892.

F. W. N. Haultain, M.D., etc.,—A Practical Handbook of Midwifery. The Scientific Press, Limited, London, 1894.

Ludvig Hektoen, M.D.,—The Technique of Post-mortem Examination. The W. T. Keener Co., Chicago, 1893.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—MORISON LECTURES ON INSANITY.

By John Batty Tuke, M.D., F.R.C.P.E.

(Delivered before the Royal College of Physicians of Edinburgh.)

Lecture II.

Mr President and Gentlemen,—In dealing with the anatomy of a convolution I trust it is fully understood that it is not my intention to endeavour to work out the dynamics of a delusion. My purpose is much more humble, being simply to demonstrate how the normal economy of the apparatus may be implicated by the action of disease, and to consider how we may best help to restore healthy relations. As yet the chemistry and mechanics of psychical processes are matters of surmise and theory; all we can say is, that mental action is a function of connexions, or as Obersteiner puts it, "The grey matter is a field for the association of afferent sensory impulses. In it they are placed in communication with efferent paths along which they travel either immediately or at some subsequent time; or, to speak more correctly, the efferent impulse is not the unchanged afferent impulse directed into a descending path, but the product of afferent impulses just received, combined with impulses liberated from their resting-places in the tissue of the brain." This much we are surely warranted in accepting; and we have a right to infer that when the continuity of these connexions is destroyed, interrupted, or structurally impaired, modification of function must ensue.

Although at present we can only surmise the physical basis of mental phenomena, it may be convenient to allude to the theories of such investigators as Meynert and Ramon y Cajal as to the afferent and efferent paths. Meynert held that the superficial layer receives the afferent or sensory fibres, that the efferent lies through the apical processes of the pyramids, and that the fusiform cells of the inner zone (his fifth layer) exercise, as association media, a trophic function. When Meynert wrote, Cajal had not demonstrated the large cells of the superficial layer, or his system of terminal fibres, and, apparently, the first recorded observer never expressed an opinion as to the origin or distribution of afferent nerves. Cajal's fourth system of fibres running directly to the superficial layer without passing through any cellular structure where they are in contact, but not anastomotic, with the "splendid tufts" of the pyramids, supplies this defect in anatomical connexion. They complete the arc. Every physiologist must yearn for full confirmation of the existence of these organs. This author goes so far as to say that with some limitations it may be affirmed that the psychical functions are inseparably associated with the presence of the pyramidal, or, as he calls them, "psychical" cells. Apart from other considerations he holds this view on the ground that as we ascend in the animal series these bodies become larger and larger and more complicated. Further, he is of opinion that the psychical cells may exercise their functions more fully and more usefully the greater the number of the collateral expansions of their axis-cylinder, and the more copious, broad, and ramified their lateral and basal expansions, which, as shown by Golgi, have no anatomical connexions, and must therefore transmit impressions by contact.[1] Golgi held that the protoplasmic processes exercised a nutritive function in connexion with the cell, but he adduces no evidence sufficiently strong to support the theory.

Such is the line of thought and research amongst a large class of anatomico-physiological workers of the present day; and although the student should always maintain a neutral attitude of doubt, he cannot but perceive that certain of the mysteries of the brain's labyrinth are being gradually dissipated. But let it be remembered that the most earnest adherent of this school only speaks of his anatomical demonstrations as affording indications of data for certain physical conditions as necessary for psychical acts. He does not attempt to throw any light on the nature of these acts, which appear at present to be outside physiological theory. No hypothesis can at present explain how a peripheral excitement having reached the first cerebral layer can be converted into two such different things as a motor act and a state of consciousness. No one attempts to go further than to try to demonstrate the paths of conduction and dissemination.

CAUSES OF IMPLICATION OF THE APPARATUS.

It might be interesting to endeavour to range all the causes of Insanity—*i.e.*, causes of solutions of continuity—under the five comprehensive etiological categories set forth by Rindfleisch as applicable to disease at large,—over-exertion, injury from without, parasitism, deficient rudiments and defective growth, and premature involution or obolescence. The inquiry may, however, be conveniently deferred to a later part of the course. It may be sufficient to state now that these categories may be held to comprise a large proportion of the insanities, and that with certain additions, and an elaborate system of sub-classes, the whole could be comprehended. In the meantime we will confine ourselves to a consideration of the first of these etiological groups

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[1] *Nuevo Concepto de la Histologia de los Centros Nerviosos.*

The study of the pathological results of over-exertion of the brain is, to my mind, at once the most interesting and important subject that can occupy our attention. The resultant mental phenomena constitute the most common and most easily cured form of Insanity ; their study opens up channels of inquiry as to the action of all other morbid influences ; and on a fair estimate of the connexion of this cause with its effects depends the position to be taken by the subject at large in the mind of the medical profession.

Am I doing the slightest injustice to any author of any work on so-called psychiatric medicine when I say that all attempts to relate what are generally spoken of as "moral" causes with insanity take the form of endeavours to construct a psychological nexus between cause and symptom, without demonstration of the intervention of any structural change in the cortical tissues. In a former course of Morison Lectures I endeavoured to show cause why we should regard these "moral" causes as inducers of physical changes in the cortex which may result in morbid phenomena of varying intensity. The arguments then adduced have (I hope) been amended since in various contributions ; and especially in the article "Pathology" in the *Dictionary of Psychological Medicine*, written in collaboration with Sims Woodhead. It is not my intention to reiterate all the statements therein made *in extenso ;* but in order to preserve continuity it will be necessary to sketch out the general argument, supplementing it by the production of certain recent observations bearing on the general question.

There can be no doubt that hyperæmia of the superior surface of the brain occurs in direct relation to psychical activity. Numerous instances are cited by Mosso and others. I have observed the phenomenon in two subjects, and George Gibson has recorded tracings taken in a case in which the brain bulged through a hole in the skull during mental action, and receded as stimulus was withdrawn. It is still an open question how this functional hyperæmia is produced,—whether by reflex inhibition of the vaso-constrictor centre, by direct action of vaso-dilator fibres, or by a combination of the action of the two systems. It may be freely admitted that there is no anatomical evidence of the existence of such nerves, but physiological and anatomical considerations tend to show that one or both must exist. In the first place, Mosso has conclusively shown that during psychical activity considerable increase of the general blood-pressure occurs; in the second, we have the fact, first stated by Moxon, that the greater veins of the pia enter the longitudinal sinus at such an angle that, as the blood enters the sinus, it is directed against the general backward-running current, so that unless the blood in the sinus is much diminished in quantity there is always retardation of the venous flow, and maintenance of a mild mechanical congestion. These two conditions must favour the rapid production of hyperæmia, and the existence of some controlling nervous influence may almost be inferred.

Bevan Lewis, starting from the fact that the blood conveyed by the two vertebral arteries is poured into the basilar—the sectional area of the single vessel being but slightly, if at all, greater than that of the two vessels going to form it—concluded that a "sustained pressure of no inconsiderable degree" is kept up in the minute nutrient arteries passing direct from it into the pons. Accepting this statement too readily, I suggested that this sustained pressure may not be entirely expended on the vessels of the pons, but may extend to the arteries given off by the circle of Willis. Lately, however, I began to doubt the accuracy of this opinion. On discussing the subject with Dr Harry Rainy, he undertook to prepare a scheme of the encephalic circulation which would test the position. By the employment of india-rubber tubes and glass ⊤-tubes the conditions were produced. Manometers were placed on the vertebrals, basilar, carotids, and circle of Willis, and tracings taken on a drum. The conclusion come to was that the original statement was inaccurate. The excursion of the pulse is certainly greater in the basilar than in the vertebrals, the excess of amplitude varying, *inter alia*, with the varying resistance to the egress of the blood from the larger vessels arising from the circle of Willis. But the mean sustained pressure is always lower in the basilar than in either vertebral, except in such cases as may be hypothetically supposed, when, both vertebrals being occluded, the blood current flows backwards from the carotids. We may therefore discard this hypothesis from the list of inducers of hyperæmia.

It is worthy of note that Rainy's experiments showed that variations in supply from the carotids alter not only the average pressure of blood in the whole system of supply to the base of the brain, but also directly influence the *locus* of maximum pulse wave.

Roy and Sherrington introduced acids and acid brain filtrates into the cerebral circulation, and found that hyperæmia was the direct consequence. Keeping before them the fact of the absence of anatomical proof of the existence of vaso-motor systems in the organ, they came to the conclusion that "the chemical products of cerebral metabolism contained in the lymph which bathes the walls of the arterioles of the brain can cause variations of the calibre of the cerebral vessels; that in this reaction the brain possesses an intrinsic mechanism by which its vascular supply can be varied locally in correspondence with local variations of functional activity."[1]

The observations of Langendorf and Gescheidlen appear to be conclusive as to the alkaline reaction of normal brain tissue, and the rapid production of acidity under abnormal conditions, such as the interruption of blood current by pressure on the carotids. Keeping in view the physiological and anatomical observations stated above, it appears to me that the strong probability is that acid products may so increase the irritability of the muscular wall of the vessels as to render it all the more susceptible to vaso-dilator or vaso-constrictor influence.

Dr Milne Murray has devised apparatus by which the rise of temperature incident on chemical changes produced by psychical activity can be demonstrated. The principle involved in this instrument is the well-known one that the electrical resistance of a metallic wire varies with the temperature within wide limits. If, accordingly, the resistance of such a wire be measured at two different temperatures, the difference between the two temperatures can also be estimated. To apply this principle, a short length of pure platinum wire is arranged in a convenient way, and applied, for example, to the temporal region, the ends of the wire being connected to a specially arranged Wheatstone's bridge, and balanced against a constant resistance. The brain is kept as quiet as possible, and when a balance is obtained, the subject of experiment is asked to read or to try to solve a problem in mental arithmetic. In a second or two the index of the galvanometer begins to swing to the side which indicates that the platinum "thermometer" is being heated. Moreover, the arrangement can be made differential by placing a "thermometer" on each temple and connecting them to the opposite arm of the bridge. A balance is obtained with the brain quiescent; but at once, on cerebral activity being started, the index begins to move, showing that one side of the cranium heats quicker than the other. In right-handed subjects the rise of temperature is usually greater on the left side.[2] [Dr Milne Murray demonstrated these phenomena on two subjects.]

Mosso has clearly demonstrated that fatigue caused by psychical action produces not only a poisonous effect on the general system, especially the muscular, of the person experimented on, but he has also shown that the injection of blood taken from an exhausted animal into the circulation of animals at rest produces in them the extreme indications of fatigue.

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[1] *Journal of Physiology*, vol. xi.

[2] A full description of the Bridge employed will be found in the *Transactions of the Royal Scottish Society of Arts* for 1893.

He is of opinion that the symptoms of poisoning are produced more from the breaking down of nerve cells than from any impairment of nutrition.

This observation brings into prominence the experiments of Hodge. Following up the observations of Sadovski and Madame Ternowski, he made a long series of experiments on the effects of electrical stimulation on the spinal ganglion cells of frogs and certain warm-blooded animals, and on the effect of normal fatigue on the cerebral cells of the sparrow, pigeon, swallow, and honey-bee. In the case of electrical stimulation, a nerve going to one or more of the spinal ganglia on one side of the animal was acted on for certain lengths of time, sometimes continuously, at others at intervals. The animal was then killed; the stimulated ganglion and the corresponding ganglion of the opposite side were removed, and submitted to identical treatment for microscopic observation. The effects of fatigue on birds and bees were observed by securing specimens of each genus morning and evening, and preparing the organs in the same manner. The results of these observations, as recorded, are very fairly regular and uniform, and are to the effect that metabolic changes in nerve cells are as easy of demonstration microscopically as those of gland cells, and that they are of the same character; that in the nucleus, which is the seat of most active change, after stimulation or normal fatigue, there is a marked decrease in size,—a change from a smooth and rounded to a jagged, irregular outline, and loss of the open reticulated appearance, with a tendency to take on darker stains than the nucleus of the resting cell; that in cell protoplasm there is a slight shrinking in size, with vacuolation in the cells of the spinal ganglia, and in the cerebral cells a considerable shrinkage, with enlargement of the pericellular lymph space of the cells of the cerebrum and cerebellum, and decreased power of taking on stains. The amount of loss of bulk, as stated in the various cells, is considerable; in the spinal ganglia the nuclear volume-shrinkage, after electrical stimulation, amounts to from 12·5 to 40·9 per cent., according to the length of time and degree of stimulation; in the cerebra of fatigued birds, to from 36 to 69·7 per cent.; and in the antennal lobes of bees from 9 to 75 per cent.[1]

Dr Hodge has kindly sent me specimens taken from the ganglion of the posterior root of the cat, and from the brains of honey-bees. Studying these sections along with Dr Mann of the Physiological Department of the University of Edinburgh, whose knowledge of the various conditions of the nerve cell exceeds that of any observer whom I have had the honour of meeting, the following conclusions have been arrived at as to the sequence of events. In the unstimulated cell the nucleus stains lighter than the protoplasm ; the first effect of stimulation is to reduce the staining of both to the same degree of intensity ; as it is continued the nucleus darkens, but remains lighter than the protoplasm ; then the nucleus becomes distinctly darker, and begins to get deformed and crenated ; and eventually a condition is produced which may be spoken of as collapse, nucleus and protoplasm losing all power of taking on stains. The first condition, that of equal staining, can be accounted for by the using up of nutrient material as the organ is brought into action ; the third stage is probably that observed by myself and others in the brains of the insane, and spoken of by Bevan Lewis as part of the evidence of over-stimulation, "dark staining of protoplasm, nucleus, and branches ;"[1] and the fourth stage the condition of actual or imminent vacuolation.

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[1] *Journal of Morphology*, Boston, U.S.A., vol. vii. No. 2, "A Microscopical Study of Changes Due to Functional Activity in Nerve Cells," by C. F. Hodge, Ph.D., Clark University, Mass., U.S.A.

It appears to me that the third stage may be regarded as the limit of functional activity changes. It had been reached after eighteen hours' continuous excitation ; and it is interesting to observe how thoroughly the pabulum of a nerve cell may be used up and yet leave the organ in a condition admitting of reconstruction. The fourth stage appears to indicate a condition from which it is doubtful whether full recuperation can be obtained.

More recently Lambert has experimented on the cervical ganglia of non-anæsthetised animals. He confirms the observations of Vas, that on the stimulated side the protoplasm is divided into two layers, which is not the case with that of the organ at rest In other respects his results are not identical with those of Hodge, but he shows marked differences on the two sides. The relative value of the two sets of observations has yet to be determined.

If we correlate the results of Mosso's and Hodge's experiments we are led to the conclusion that the poison of fatigue is elaborated from the material lost during the period of work. Hodge's experiments extend to the process of recovery of individual nerve cells after electrical stimulation, which he finds to be slow, being scarcely complete after twenty-four hours' rest. It may be almost inferred from this that the degree and length of time of electrical stimulation applied exceeded the quantity which the cells are constructed to bear. The birds and bees he examined in the morning may be presumed to have done a previous day's work, and, so far as can be judged, their cells had reacquired functional integrity in twelve hours.

Halliburton and others have demonstrated the presence of albumoses in the cerebro-spinal fluid taken mostly from cases of spina-bifida. Such specimens cannot be regarded as healthy, and certainly cannot be used to illustrate the condition of the fluid after work; nor do these observers give any opinion as to the nature of the albumoses. We have no evidence, therefore, as to what the poison actually is; but I am informed by students of physiological chemistry that it is probably something midway between albumose and a body of simpler constitution, possibly a body closely allied to urea. All we can say at present is that it is of acid reaction.

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[1] *Loc. cit.*, p. 476.

With the possible exception noted, the experiments of Mosso and Hodge may be held to apply to the condition of organs under strictly physiological conditions. Expenditure of energy means expenditure of material, which is met by functional hyperæmia existing for such time as the stimulus is maintained. When it is withdrawn rest is obtained, and the vessels return to their ordinary calibre through constricting nervous action. But stimulation, abnormal in degree, kind, or duration, may make such demands on the local circulation as to produce in the brain, as in all other organs, pathological conditions not confined to the vessels themselves, but extending to the tissues they supply.

If we consider what occurs in other organs, such as the liver and kidneys, as a consequence of unphysiological hyperæmia, we find that a condition of unstable equilibrium between nutrition and function may be reached, productive of irregularity of action of their apparatus, and of implication of their vaso-control systems. In the brain we may have identical morbid processes going on. Continuous or frequently recurring excitation or irritation calls for an increase of blood; the function of the vaso-motor nerves becomes overstrained; the consequent dilation of the vessels is maintained by the lessened alkalinity of the cerebro-spinal fluid; and the discharge of energy of the cells becomes irregular in consequence of the presence of more blood than is needed for repair, and the discharge takes place at a low level of cell nutrition and function. If this state of matters persists for any great length of time, and no relief is obtained, the sequence of pathological events common to all tissues under irritation ensues,—active hyperæmia, passive hyperæmia, and congestion. What is, to all intents and purposes, a sub-inflammatory condition is reached, evidenced by deposits of leucocytes, much greater than normal, between the hyaline membrane and the muscular coat, by red corpuscles in various stages of degradation, by large masses of pigment, by proliferation of the fixed connective tissue cells of the vessel, and by exudation.

Concurrently with, or at short periods after, the establishment of hyperæmia, we have implication of the important functions of the lymphatic system. On account of the basal position of the openings of the skull it is evident that even slight pathological alterations, either at the vertex or the base, but especially at the vertex, must implicate the maintenance of the vascular unity of the cerebrum, if they interfere with the removal of lymph fluid. Continued upward pressure must dam back the fluid by interfering with the patency of the pial conduits; the only relief being found by the action of the Pacchionian villi. I need not tell you that in subjects of chronic insanity these organs are often found, after death, much hypertrophied; this is doubtless due to the demands which had been made on them for the relief of the waste products of the organ. Doubtless this condition of the Pacchionian bodies is found in non-insane subjects; but in those I have met with the brain history had not been ascertained. There is, however, no doubt but that the condition is much more common in the insane than the sane. But apart from this, obstruction to the outward flow may result from the deposit of *débris* produced by the breaking down of leucocytes, endothelium, and by deposits of blood-pigment, which are apt to collect in the perivascular lymph space. Collections of such material can be seen in large quantities within the canals, which can often be traced in squeezed-out specimens by its accumulation. The drainage being thus obstructed, the cells are subjected to the action of a fluid which is not only as to reaction in an unphysiological condition, but is also loaded with the products of waste. The pericellular sac is connected with the hyaline sheath by a fine tubule, the aperture of which is apt to be occluded by an abnormal flow of exudate carrying with it the *débris* above spoken of. And, again, such exudation fluid, when confined, probably acts detrimentally, by the exercise of pressure, on the conducting power of the vaso-motor systems, and thus helps to maintain the general condition of hyperæmia and congestion. In evidence of these theories, or, as I believe them to be, facts, I submit to you specimens taken from the convolutions of four patients who died within two months of the incidence of insanity; in two of these the symptoms were those of mania, and in the others those of excited melancholia. The specimens illustrate the conditions I have been speaking of, and the differences they exhibit are more in degree than in kind. It is not often one has the opportunity of examining such subjects, for death does not usually ensue: it is only occasionally that such cases die from exhaustion, suicide, or some intercurrent disease, pneumonia being the most common cause of fatal results. Nor do I maintain that in all cases you have the same intense implications as are shown in these specimens; still I think we have every right to assume that cases minor in degree as to symptoms are dependent on morbid action and pathological products similar in kind, although less in degree.

It is not my intention to trace the further solutions of continuity of the brain-elements produced by congestion of the convolutions, for those now submitted to your consideration are, I believe, the causes of the early symptoms of Idiopathic Insanity,—*i.e.*, the insanity produced by over-exertion of brain function.

The initial symptoms of this disease are generally insidious in character. Founding on the statements made by patients suffering from premonitory symptoms, on those made by others who, after recovery from acute attacks, are able to carry back their recollections to the incidents of the prodromal stage, and on direct observation, I have no difficulty in asserting that physical phenomena are the first to present themselves. These consist of a feeling of fulness or uneasiness of the head, or of a dull, heavy pain extending from the forehead to the vertex, or even further back to the occiput. In some cases throbbing of the temples and eyeballs is complained of. Along with these sensations there is a general feeling of *malaise*. The pulse is generally irritable, not much increased in rapidity, but fuller than normal, and it may gain so much in volume as to assume a "cerebral" character. The first heart-sound is often accentuated. The temperature rises slightly at night. The general system becomes impaired; disturbances of the digestive organs manifest themselves, and the nutrition of the body suffers. Oxalates or phosphates are usually present in the urine. In women the function of menstruation is affected. The mental symptoms follow closely. They consist in anxiety, restlessness, irritability, inability to apply the mind to the ordinary affairs of life, a strong tendency to introspection and concentration on self, and sleeplessness. Up to this point it is rarely possible to predict, with any certainty, whether the case will culminate in acute mania or in acute melancholia. If, however, no check is applied to the progress of morbid processes, loss of the function of control over ideas is manifested by excitement in one of two directions—(1) by the domination of one set of ideas, which are mostly of a depressed character; or (2) by a tendency to follow lines of thought suggested by accidental circumstances,—that is to say, either a condition of acute melancholia or of acute mania is established. I have spoken of these two conditions as states of excitement, for we must bear in mind that although acute melancholia is manifested by depression of feeling, and acute mania by exaltation of feeling, they are both manifestations of excitement of feeling. Further, it must be remembered that although in many cases the character of depression or exaltation is maintained throughout, a large class exists in which it is impossible to say whether they are melancholic maniacs or maniacal melancholics.

This chain of symptoms is, I submit, distinctly referable to the brain conditions which have been sketched. They are the outward expression of gradually increasing fatigue affecting the whole system, and are manifested in the brain by what appear at first to be slight, but what are really important implications of psychical function. Along with abnormal hyperæmia we have headache, irritability, and restlessness. In connexion with the last symptom, restlessness, it may be well to remind you that the naked-eye evidence of morbid action in the insane is focussed around the so-called sensory-motor areas. In the very large majority of all cases dying insane we find the milky opacity of the arachno- and visceral pia, which is closely associated with underlying morbid processes, present in a space which can be covered by the two hands placed together, the lower ends of the hyperthenar eminences covering the spot where the fissures of Rolando meet. Is it pressing theory too far to suggest that, as the cells in this region of the cortex being the first to meet with morbid exudates, and being those of whose functions one appears to be the transformation of sensory impulses into motor acts, restlessness may be the indication of impairment of their activity? The giant pyramids are the first to show marked altered structure, and it is for this and other reasons difficult to refuse the inference that they are the structures implicated, and that, concurrently with the advance of pathological events in them, what was at first mere restlessness waxes into the excited action of acute mania or acute melancholia.

I think that by certain expressions I have indicated a belief that what are apparently widely divergent morbid mental symptoms—mania and melancholia—are dependent on common pathological conditions. The following clinical observations support the position as to the unity of pathological causation:—

1. During the prodromal period the symptoms of excitement and depression alternate.
2. In many acute cases mania and melancholia co-exist.
3. As many cases run their course towards recovery the symptoms are consecutively melancholia, mania, and dementia.
4. In *folie circulaire* the same sequence of symptoms occurs time after time.
5. In general paralysis of the insane a certain proportion of cases is characterised by exaltation of feeling, another by depression, and a third by obfuscation of intellect, from beginning to end; whilst in certain others we may have all varieties and degrees of symptoms.
6. The effect of the administration of certain poisons, especially alcohol, is a sequence of psychical phenomena of much the same character.

These observations point, not to a difference in kind of primary causation, but to variations of symptoms in accordance with the progress and nature of pathological processes, which vary principally in accordance with the constitution of the tissue of the individual. It must be borne in mind that the deposits of inflammatory products and of congestion are not identical or constant in the individuals of a series of subjects, because the individuals and their tissues are not constant quantities. We have, then, a constant condition of irritation acting on inconstant subjects. Given this constant pyschological condition of excitement, whether it be manifested by exaltation or depression of feeling, we must seek for an explanation of the varieties of its phenomena in some quality or quantity of its exciting cause, in some peculiarity of its pathological products, or in some idiosyncrasy of the affected individual. We derive no material assistance from psychological considerations, for there is no necessary connexion between depressing emotions and melancholia, on the one hand, or between stimulating emotions and mania on the other. Intense grief produces mania as often as melancholia, and the insanity of the man of saturnine disposition is as often as not characterised by mania. The peculiarity of the exciting cause appears to be, not its psychological characteristics, but its intensity and rapidity of incidence, the latter depending not only on the former, but also on the stability or instability of tissue. According as excitement of feeling is rapidly produced, so the more likely is mania to be the symptom, in consequence of the action of abnormal arterial hyperæmia, and its immediate consequences. I have before my mind's eye the case of a man who, on hearing by telegraph of the death of his wife, rapidly developed symptoms of an exalted maniacal character. It is not only to the construction of the cortical cells and their network to which we may look for evidence of instability and irritability, but also to the ganglia which govern the vaso-motor systems of nerves. Inherent weakness of these centres may play an important primary *rôle* in the production of insanity, more especially in relation to the rapidity of its production. That melancholia often supervenes on depressing emotions, gradual in their incidence and action, does not imply a psychological nexus, but that as their irritating influence is generally slowly applied to cells of diminished vitality and nutritive power, so the results of irritation are slowly produced; and, as in the case of every organ of the body, we have variety of degree of symptoms in conformity with the rapidity of the progress of pathological events. In extreme cases of recent excitement, maniacal and melancholic, I have found stasis and the results of inflammation of a subacute character; in chronic cases the same appearances are presented, although in a less degree, whatever the symptoms may have been; and if we have any warrant to connect post-mortem demonstration with the indications of disease during life, the inference is unavoidable that considerable variety of clinical phenomena may be dependent on a common cause acting on differently constituted tissues.

(*To be continued.*)

II.—THE DISORDERS OF SPEECH.

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(*Continued from page* 697.)

APHASIA AND OTHER DISTURBANCES OF SPEECH IN RELATION TO EVANESCENT ORGANIC AFFECTIONS AND FUNCTIONAL DISORDERS OF THE CEREBRAL CORTEX—*continued.*

Aphasia in Insanity.

It will be remembered that in treating of the troubles of speech in Insanity, I reserved for future consideration the relations of aphasia to insanity, merely remarking that, among the insane, aphasia is met with in two classes of cases, viz., (1), the class in which the insanity and the aphasia are alike due to the presence in the brain of some gross lesion, such as a softening; and (2), the class in which aphasia exists as a functional complication of insanity, often a merely transitory complication, and in which there is no gross lesion in the brain to account for it. In now making a few notes as to the relations of aphasia to insanity, I shall pass over the first of these two classes altogether, and confine my attention to the second.

It will be readily understood that the varieties of insanity which are most apt to be complicated by the occurrence of functional aphasia are those in which there is obvious depression of the nervous energies of the brain. The depression of energy may be lasting, as in senile dementia and in chronic melancholia, or may be temporary, as after one or other of the numerous forms of nervous seizure which the insane are peculiarly apt to experience from time to time. Let us look for a moment at the effects of each of these two classes of conditions.

1. CONDITIONS OF LASTING DEPRESSION OF NERVOUS ENERGY IN INSANITY.—We have already considered the speech troubles of chronic dementia, and have seen that a true amnesic aphasia from time to time exhibits itself in such dementia, and more especially, perhaps, in one of its varieties—the senile. Indeed, a certain amount of amnesia of proper names is so common in advanced age that it may be said to be almost a normal phenomenon. But when, in the aged, the mental powers become so enfeebled that the patient may be described as being the subject of senile dementia, the amnesic aphasia is often more strikingly exhibited. It may be constantly present, displaying itself, for example, in a forgetfulness of the names of common objects, or it may occur only from time to time, when the brain is temporarily exhausted. Along with the amnesia verbalis, there may, at such

times, be a disablement of articulation which shows all the characteristics of motor asynergia.

It is so, also, in connexion with the mental enfeeblement and depression that attend upon melancholia, and more especially upon melancholia with stupor and mutism. Séglas has studied this subject with care, and has recorded a number of interesting cases of melancholia in which various kinds of disturbance of speech were observed.[1] Besides the mutism so common in such cases—due sometimes to inattention to everything but the internal hallucinations and delusions, sometimes to enfeeblement of will or of motor power,—he notes the occasional occurrence of troubles in the power of reception and interpretation of speech. (1.) He states that the patient may, as in an ordinary case of word-deafness, be able to hear the sound of the words spoken to him, but not be able to interpret them,—because of functional disablement of the auditory word-centre A. (2.) He states that there may be something more than this: that there may be general mind-deafness. In this condition, the patient is unable to recognise even common sounds. When spoken to, he not only fails to interpret the words spoken, but also to recognise the tones of a voice that at other times is perfectly familiar to him. One of Séglas's patients expressly stated to him that his voice sounded as if it were the voice of a stranger. (3.) He has also noted that in some of these cases of melancholia, there was what he terms a loss of the power of synthesis in interpretation. The patient could interpret the meaning of individual words, but not that of a sentence,—because he could not hold the whole sentence together in his mind. This was apparently due to evanescence of the word-images. It need scarcely be said that all such observations upon the speech of melancholics are necessarily made under circumstances of exceptional difficulty, and are correspondingly liable to fallacy.

2. Conditions of Temporary Depression of Nervous Energy in Insanity.—It is known that the insane as a class are peculiarly apt to suffer from other nervous troubles besides their insanity. A large proportion of them are liable to temporary conditions of great mental excitement; or to seizures of various kinds, such as epileptic or hysterical fits, attacks of megrim, the apoplectiform or epileptiform seizures of general paralysis known as "congestive attacks," cataleptic conditions, and many other such disturbances.

All, or nearly all, such seizures cause exhaustion of cerebral energy for a time, and one of the evidences of such exhaustion may be a temporary development of aphasia. But, as these different kinds of seizure are also of frequent occurrence in persons who are not insane, and in them, too, are apt to produce aphasic disturbances of speech, it will, I think, be better to describe their effects on speech under separate headings, rather than to treat of them all in relation to the speech of the insane.

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[1] *Les troubles de la parole chez les Aliénés*, Chap. ii.

Before leaving the subject of insanity, however, let us note a variety of seizure that we shall not again have occasion to refer to—I mean the "congestive attacks" of general paralysis. We may say about it, in a word, that, in patients with general paralysis, temporary aphasia is, after a "congestive attack," of very common occurrence. The nervous exhaustion resulting from the attack seems to be the cause of it.

Aphasia in Hysteria.

In the second paper of this series, the disturbances of speech that may possibly be presented in hysteria have been fully considered. It will be remembered that by far the commonest of these is hysterical Aphonia; that hysterical Mutism is occasionally met with; and that hysteria has important relations to Stammering,—stammering being in some few cases distinctly due to the nervous disturbance produced by an hysterical fit,[1] and being in most cases a developmental defect of speech that occurs with special frequency in children of nervous or hysterical constitution.

We have seen how closely hysterical mutism trenches upon true motor aphasia; the chief points of difference being that in hysterical mutism the voice is, in the great majority of cases, lost, and the power of writing completely retained, whereas in ordinary motor aphasia the voice is retained, and the power of writing lost or greatly impaired.

True aphasia is rare in hysteria; but that it occasionally occurs is now coming to be the accepted view of those who have paid most attention to the subject. There are now, indeed, several cases on record in which a true motor aphasia, of purely functional origin, has been found to be due to hysteria,—being, as a rule, a temporary result of some hysterical seizure. In some of those cases, as in the case originally recorded by Charcot, and quoted by Natier[2] in his collection of cases of hysterical mutism (see second paper), agraphia was present as one of the symptoms. The best case of this kind that I know of is one that has been published recently; and this case is so instructive that I am tempted to insert here a short note of it.

CASE IV. (P. Ladame, *Centralblatt für Nervenheilkunde*, iii., 1892, p. 241). *Case of Aphasia with Agraphia due to Hysteria.*—Mme. F., the wife of an employé on the railway; age not stated. She had formerly, at the age of 20, suffered from hysterical mutism for six months. On the 9th of January 1892, she was brought to Dr Ladame by her husband, on account of a second attack of hysterical mutism; and this attack seems to have been of that variety which disables the oral articulative mechanism (see second paper), as, though it is asserted that the patient was without voice, it is also stated that she could emit rough sounds like *han, hon, han.* She was quite speechless. She was much excited, and trembled all over the body, the trembling being most marked in the right arm. Her writing was very tremulous and almost totally illegible. There was complete anæsthesia of the whole of the right side of the body; and, as is often the case in hysteria, the pharyngeal reflex was absent. The attack had begun suddenly, three weeks before she was seen, in consequence of a fright she had got in a dream. The fright had caused some kind of fit, with convulsions, especially in the right arm, and unconsciousness. On recovery of consciousness, the patient was found to be in the condition above described.

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[1] See the article entitled "Du bégayement hystérique," par M. Gilbert Ballet, *Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris*, 23rd October 1889; also the article, "A propos du bégayement hystérique," par le Dr Chervius, *Arch. de Neurologie*, 1891, p. 365.

[2] *Contribution a l'étude du Mutisme Hystérique*, 1888, p. 47.

It is interesting to find that in this case the mutism was cured, as it had been produced, by a fright. This second fright the patient experienced on the day after she had consulted Dr Ladame. Her husband had had some friends with him in the house at the time, and the patient, with her baby of four months, had been seated in the room with the company. One of the friends, happening to reach up to a shelf for a glass, brought down the shelf, and a great many bottles and glasses that had stood upon it, with a great crash. The patient was for the moment much frightened, and tried to cry out, but could emit only inarticulate sounds, somewhat like *can, can.* She, however, composed herself, and was presently able to sit quietly, listening to the conversation, and at the same time caressing her baby. About ten minutes after the fright, when she was looking fondly at her baby, she suddenly heard her own voice pronounce the words, "est-tu bien, mon petit." From that moment, she could speak perfectly well: she did not even stammer; and her voice was no longer rough. The pain and tingling in her head, and the anæsthesia of the right side of the body, also disappeared; and when Dr Ladame saw her next day he found that the pharyngeal reflex had returned; and that she could now not only speak, but write quite well. "In a word," says Dr Ladame, "she retained none of the stigmata of her hysteria."

In commenting on the case, Dr Ladame recalls the dialogue in Molière's *Le médecin malgré lui*, in which an hysteric emits, in reply to all questions, the sounds "*han hi hon han han hi hon;*" and he thinks that Molière must, at some time, have met with a real case of hysterical mutism, as the sounds *han hon* were the very sounds that were emitted by his own patient. It should be remembered, however, that this variety of hysterical mutism, in which the oral articulative mechanism is disabled, is rare. Much more common is the other variety, in which the vocal mechanism is disabled,—so completely that the patient cannot even make the laryngeal noise that is required for whispering. The two varieties have already been described in the second paper. The point of interest in this case is the similarity—almost complete identity—of the symptoms with those of an ordinary case of motor aphasia. There is, for example, the recurring utterance *han han.* There is also a form of agraphia; though the specimen of writing given in the paper does not show the "recurring letters" that are so often exhibited in motor aphasia. It is illegible largely from the tremulousness of the handwriting.

I may here add a remark or two regarding the speech disturbances apt to occur in certain other conditions closely allied to Hysteria, viz., Catalepsy and Ecstasy, and the condition now termed Astasia Abasia.

In reference to Catalepsy and Ecstasy, Kussmaul (p. 801) says, "In catalepsy, the power of speech is lost during the attack, and the same thing may happen in ecstasy." Future investigation will, no doubt, show to what special causes the loss of speech is, in these two conditions, due. Perhaps in catalepsy it is due to temporary disablement of the motor centres; and in ecstasy to the concentration of the attention upon a single fixed and absorbing idea.

As to Astasia Abasia, it is the condition that was first described by Dr Weir Mitchell under the name of Hysterical Ataxia. In this condition, the patient may, from incoördination of muscular action, be unable to walk (abasia), or even to stand (astasia). I find that in one good case, recorded by Charcot,[1] it is noted that there was a curious interference, not with the power of speech, but with that of *writing.* The patient could perform all ordinary movements with his hands perfectly well, without either incoördination or trembling; but when he tried to write, it was found that, after writing some lines quite legibly, he began to make only illegible strokes; and, as he went on, these strokes became closer and closer to each other, until they fused themselves into a single tremulous stroke, repeated over and over again.

Aphasia in Relation to Epilepsy.

It is a well-known fact that temporary aphasia often makes its appearance in connexion with epilepsy, sometimes as a preliminary "aura," sometimes as an after-consequence of the fit. In the latter case, it is no doubt due to the exhaustion of the brain that is brought about by the "motor discharge." Kussmaul (p. 800) says, "After epileptic attacks there is often loss of speech for hours, days, or weeks at a time." Dr Ross (p. 50) says, "The most common functional lesion of the brain that gives rise to aphasia is the condition which precedes or follows an epileptic attack. In some cases, the warning of an epileptic attack consists of a sudden inability to speak; and it is very probable that word-deafness and word-blindness is by no means an uncommon aura, though the presence of these conditions is not so readily recognised by the observers as a motor aphasia, and in subsequent descriptions by the patient they can hardly be distinguished from the mental confusion which attends the onset of unconsciousness. A transient aphasia often succeeds to the unilateral convulsions which are caused by gross lesions of the brain, such as gliomatous and gummatous tumours, and projecting spicula of bone."

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[1] *Leçons du Mardi,* 1890, p. 355.

In cases of partial epilepsy of the Jacksonian type, without loss of consciousness, the disablement of the power of speech is always exhibited whenever the convulsive disturbance involves the muscles of the cheek, tongue, etc. I have notes of two cases of this kind, in which the convulsions were limited to the right side of the face and the right arm; and, in each of these, the patient was speechless, though never unconscious, both during the seizure and for a minute or two after it was over.

It has been suggested—I do not remember by whom—that the loud "epileptic cry," which so often precedes a fit of general convulsions, is due to sudden motor discharge from the centre for phonation, in the foot of the ascending frontal convolution; and I think there is much probability in the suggestion.

Speech Troubles in Chorea and in Spasmodic Tic.

1. In Chorea, a certain degree of mental dulness very often precedes the appearance of the choreic movements in the limbs, and is apt to persist while these movements are present. In severe cases, again, there is often wild delirium. Therefore, the mental functions being so often involved, it is not improbable that an element of amnesic aphasia is common in chorea. But I cannot say that I have met with any distinct records of cases showing the presence of this condition. What we do find very commonly is more or less interference with the motor execution of speech; and this is sure to be exhibited whenever the muscles of the oral articulative, the vocal, or the respiratory mechanisms are seriously involved in the spasmodic disturbance. In not a few cases, the muscles of all these mechanisms are seriously involved together. They may be affected to such a degree, that the patient is, for the time being, rendered practically dumb.[1]

I may here insert a brief note of two cases of my own, in which speech was thus markedly interfered with; one of them being a case of ordinary chorea in a child, and the other a case of chronic chorea in an adult.

Case V. (Personal observation.) *Shows disturbances of speech*

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[1] Some very instructive cases of chorea with speech disturbances have been recorded by Charcot, *Leçons du Mardi*, 1889, pp. 37 and 103.

from involvement in choreic movements of the muscles of oral articulation, phonation, and respiration.—A boy aged eight, admitted into Ward 31, on 10th of December 1892. The chorea had developed gradually, after an attack of subacute articular rheumatism, in the preceding August; and had been getting rapidly worse for a fortnight before his admission. Almost from the first appearance of the choreic movements, the mother had noticed that the articulation was interfered with. Along with very marked choreic movements of the upper and lower limbs, and of the face and neck, there was, on admission, so much interference with articulation, that the patient was for a time almost dumb. On the 14th of December, I dictated the following note as to the condition of speech, etc.: "Breathing on the whole is regular, but now and again inspiration is only half-drawn, or it is too fully drawn. Expression of face is dreamy. When asked his name, says 'John' pretty distinctly, but gives his surname 'Adam' in a whisper. When asked his age, says 'ng—nine.' The following is a list of words he was asked to pronounce, and of the sounds he produced instead of them:—For Guardbridge (his home) he said 'Ayab.' For Mother he said 'Moo.' For Yes—only makes the sibilant sound of S. For Father—opens his mouth and protrudes point of tongue. On second attempt says 'Fath' in a whisper, turning up his eyes at the same time. For Papa—merely presses his lips together, and protrudes them. On second attempt, says 'Pap' in a whisper. Mama—is pronounced correctly, but in a whisper. For From—says 'Thumb.' For So—merely hisses the sibilant S."

On the 24th of December, when he was asked his name, his tongue could be heard working within his mouth for some time, until, with evident effort, he got out "on," for John.

From this date, he improved steadily. On the 25th of February, he left the Infirmary quite well, and able to speak with perfect ease.

CASE VI. (Personal observation.) *A case of chronic chorea in an adult showing troubles of speech very similar to those of the last case.*—The patient was a man, aged 43, who came to me as an out-patient in January 1892. He is a well-known inhabitant of the Grassmarket, where his extraordinary walk and gesticulations attract general attention. Many years ago, he was a marine in the Royal Navy. In 1872, he was invalided home on account of ague, contracted in the West Indies. In 1884, when still in the Navy, he began to suffer from epileptic fits; and, as these continued to recur every three months, he was, in 1886, discharged from the service. He then became a baker, and continued at this occupation until October 1887, when he began to suffer from numbness and tingling. These sensations were first felt in the upper limbs, then in the lower, and, finally, also in the muscles of the trunk and of the head and neck. In 1890, he began to suffer from choreic movements, first in the left hand and arm, and then in the right; and the movements gradually extended to his lower limbs and trunk, until they involved his whole body. In January 1892, when I first examined him at the Infirmary, the chorea was exceedingly well marked. Even when he sat upon a chair, all his limbs executed the most grotesque movements. As to the other parts of his body, the trunk was violently arched backwards from time to time, the head was turned suddenly to one side or the other, and the features were perpetually undergoing extraordinary contortions. In walking, the foot was generally lifted high in the air, before being brought down with emphasis on the heel, the knee being meanwhile kept stiff; and at the same time the arms were violently thrown about. Mischievous boys of the street are apt to mimic his extraordinary gait, and he told us that when they do so he is so much annoyed that his excitement often brings on one of his epileptic fits.

After the perpetual motion of the day, he feels thoroughly worn out at night; but in the morning, after a good night's sleep, he is comparatively fresh.

The speech of this patient closely corresponds to the speech of the little boy whose case has just been noted. It is emitted in a most jerky and irregular manner, being sometimes delayed by the involuntary movements of the tongue, lips, etc., and sometimes—suddenly, in the middle of a word—either converted into a whisper by the involuntary movements of the muscles of the larynx, or arrested altogether from sudden stoppage of the expiratory air-pressure, or sudden occurrence of an involuntary inspiration. For example, in telling us that he had lately been taken before the sheriff as an impostor, the poor man said that he had told the sheriff that he was anything but an "impo—" (word arrested by sudden inspiration).

2. SPASMODIC TIC.—This is a condition closely allied in its symptoms to chronic chorea, but differing from it in the more sudden and less coördinated nature of the movements. A chronic and usually incurable malady, it occurs in all degrees of severity, from a mere local and momentary spasm, such as the spasmodic and violent closure of the eyelids, or the sudden and involuntary shrug of a shoulder, up to constant and severe movements of the whole body, closely analogous to the movements of severe chronic chorea. In cases of the latter degree of severity, it will probably be found that speech is often interfered with, in a manner similar to that exhibited in cases of severe chronic chorea.

But in connexion with spasmodic tic there is also occasionally exhibited another phenomenon, which seems never to be met with in connexion with chronic chorea. This is Logospasmus Choreiformis, a sudden and involuntary emission of some particular word or phrase; and is the phenomenon to which the name Coprolalia (κόπρος, ordure, and λαλεῖν, to talk) is given, when the word habitually ejaculated is a dirty and disreputable one, as it very often is.

In the paper on the speech of the Insane, I have already referred to this curious phenomenon, and to the indications of weakness of mental balance that are usually found associated with it in severe cases of spasmodic tic.

Aphasia in relation to Megrim Headache and to Simple Nervous Exhaustion.

In ordinary Megrim, which is so extremely common, aphasic disturbance of speech is very rare. It is less rare, however, in what are called the "accompanied" forms,—the forms in which the headache is accompanied either by ophthalmic phenomena or by paresis of one side of the body. When there is paresis of the right side of the body, there is often also aphasic disturbance of speech; and in cases of "ophthalmic megrim," even when there is no hemiplegic paresis, aphasic disturbance of speech is not uncommon.

In ophthalmic megrim, the disturbance of vision usually precedes the onset of the headache. As is well known, it often takes the form of a temporary attack of homonymous hemianopsia. This begins with a small blind spot in the centre of the field of vision, which gradually spreads, in both eyes, on one or other side of the field, until the hemianopsia is established,—the spreading margin of the blind area being surrounded by zig-zag lines of silver or coloured light, which are in perpetual dancing movement. When these scintillating lines of light reach the periphery of the field of vision, the centre of the field begins to clear up, and clearness of vision then gradually takes the place of blindness on the affected side, until the whole field is clear. It is when the hemianopsia is clearing away that the second stage of the attack, the stage of pain in the head, sets in. This stage of pain may be succeeded by a third stage, viz., that of vomiting, with which in some cases the attack terminates.

It would seem that aphasic disturbance of speech may appear either in the first or in the second stage. It sometimes takes the form of a simple amnesia of words, especially of nouns, which makes the patient, for the time, unable to produce the words either orally or in writing; but in other cases both word-deafness and word-blindness are present.[1]

I have before me notes of a case of functional aphasia, occurring in the course of an attack of megrim with ophthalmic accompaniments; but, as such cases are now common in medical literature, I need not here give an account of this one.

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[1] Charcot has recorded such a case, *Gazette des Hôpitaux*, 17th May 1884. (See also Séglas, *op. cit.*, p. 89.) In this case the aphasia always set in with the second stage of the attack, the stage of pain in the head.

Megrim headache is one of the commonest causes of temporary aphasia. It is, of course, well to keep this fact in mind; as an attack of aphasia, however temporary, always excites alarm in the mind of the patient and of his friends. If the cause of the aphasia is obviously megrim, it is a great matter that the physician should be able to assure the patient and his friends that there is no need for alarm. This he can generally do. At the same time it should be remembered that "accompanied megrim" is on the whole a graver neurosis than the simple unaccompanied form; and this may be said whether the accompaniment be hemianopsia, or aphasia, or hemiplegic paresis, or all three combined. Ophthalmic megrim, developed, as something new to the patient, in middle life, has sometimes proved to be the precursor of a nervous breakdown, which may even take the form of General Paralysis of the Insane.[1]

There are upon record a number of interesting cases of temporary aphasia, occurring in the persons of eminently intellectual men, who have been able, when the attack was over, to give an account of their experiences during it; and there is reason to think that some of these cases have been due to megrim.

The celebrated case of Dr Spalding of Berlin, which has been given by various authors, and will be found detailed in the paper by Professor Gairdner, already quoted from,[2] may perhaps have been due to megrim, or simple cerebral fatigue, or both together. It is a remarkable case, inasmuch as the reception and interpretations of speech, or at least of written speech, were evidently interfered with, as well as its production.

Dr Spalding, in January 1772, after having been rather busily engaged, was asked to draw up a receipt for interest. "He accordingly sat down and wrote the first two words requisite, but in a moment became incapable of finding the rest of the words in his memory, or the strokes of the letters belonging to them." He wrote some words, and knew that they were not right, but could not tell exactly what was wrong with them. He therefore, by signs and monosyllables, quietly ordered away the man who was waiting for the receipt, and proceeded to observe his own condition.

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[1] Such a case is recorded by Charcot, *Leçons sur les maladies du système nerveux*, t. iii., 1887.

[2] *Proc. of the Phil. Soc. of Glasgow*, 1865–68, p. 110. Dr Gairdner quotes the case from the work of Dr John Cheyne entitled *Essays on Partial Derangement of the Mind in Supposed Connexion with Religion*, Dublin, 1843. The case, I find, is also fully given, in Dr Spalding's own words, by Dr Crichton, in his work entitled *An Inquiry into the Nature and Origin of Mental Derangement*, 1798, vol. i. p. 287. Dr Spalding attributes the attack to the previous straining of his attention. After describing the work he had been engaged in, he says, "My attention, therefore, was constantly kept on the stretch, and was continually shifting from one subject to another."

He found that he could think quite clearly, in spite of emotional and ideational disturbance, and that he could see and hear "everything about him with its proper shape and sound." But when he tried to speak, he found that he could only pronounce unmeaning syllables. After sad meditation upon his condition for half an hour, he found himself getting clearer and more quiet in his mind. Wishing to summon his family, he first practised the pronunciation of the requisite order, and then rang for the servant. When the members of the family arrived, he was able to speak to them, though slowly and with difficulty; but, by-and-by, his facility of utterance returned; and he found himself only with a trifling headache. He now bethought him of the receipt he had been attempting to write, and—behold!—instead of "Fifty dollars for half a year's interest," as it should have been, he found that he had written, in as clear and straight strokes as ever he had made in his life,—"Fifty dollars through the sanctification of the bri-," with a hyphen, as he had come to the end of a line. He could not in any way account for the extraordinary words he had written.

The case is of special interest, as showing (like Prof. Charcot's case, alluded to in the footnote to p. 789) that in functional aphasia there may, along with simple amnesia verbalis, occasionally be also paragraphia, and failure in reception and interpretation of speech.

The case of Professor Lordat of Montpellier is of still greater interest; because Lordat, who was himself the patient, had long been deeply interested in the subject of speech, and was therefore, on his recovery, able to give a very detailed account of his own experiences. But I refrain from giving this case in detail, partly because it has been so often recorded, and partly because it has always seemed to me probable that the case may have been due to some organic cause, such as thrombosis of a cerebral vein or sinus. I found this opinion upon the facts—(1), that the attack set in upon the sudden and unexpected retrocedence of an attack of quinsy, which did not go on to suppuration, as the patient's previous attacks had done; (2), that, unlike other supposed examples of aphasia of functional origin, the aphasia here lasted, not merely for a few minutes or hours, but for several months; and (3), that it left behind it a certain slight damage to the power of expression. We are told by Trousseau that before the attack Lordat delivered his eloquent lectures on physiology without notes, but that after it he was obliged to read his lectures. That the damage was not very material will be apparent to any one who reads Lordat's admirable treatise on the *Analysis of Speech*,[1] written subsequently to the attack, and containing his account of it.

The most remarkable point in Lordat's case is his distinct assertion that he could internally think quite well, and could even in his mind arrange the headings of a lecture, though unable to find in his mind the words in which his thoughts could be expressed. For the time, also, he seems to have been totally word-blind, and partially or totally word-deaf; and it is touching to read his description of his delight, when, one day, the title of a work in his library caught his eye, and he found himself able to read once more, and understand, the words "Hippocratis Opera."

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[1] *Analyse de la parole*, 1843.

Sometimes, in functional aphasia, paraphasia has been observed. Thus, Professor Gairdner records the case of a friend of his own, who had attacks of ophthalmic disturbance and vertigo—evidently of the nature of megrim, though without headache or sickness,—and who, during the attacks, exhibited marked paraphasia. "Whenever he attempted to speak in the midst of this vertigo, the words seemed to come out quite differently from what he intended, and as if he had lost control over them. In fact, he talked nonsense, knowing and feeling that it was nonsense, but without the least power to make sense of it."[1]

A similar case will be found noted in Sir Frederic Bateman's work (p. 203). It occurred in the person of an eminent physician, who, at the time, was suffering from severe fatigue, and possibly also from megrim. When going through his wards at the Infirmary "after a deal of hard professional work, he lost command of his tongue, and found himself talking nonsense—absolute nonsense. He knew that he was talking nonsense, but he could not help it, and he felt for the time being that he must speak nonsense. At the same time he was attacked with giddiness; but after resting a little, he regained control of himself, and the symptoms never occurred again."

Thus, among the phenomena of functional aphasia may, as of occasional occurrence, be reckoned paraphasia, paragraphia, word-blindness, and word-deafness. But the occurrence of these phenomena is rare. The occurrence, indeed, of word-blindness or of word-deafness ought generally to suggest to the mind of the physician the probability of an organic rather than a functional cause. In common cases of functional aphasia, the leading and often the only phenomenon is amnesia verbalis (logamnesia)—the loss of the power of calling up words in the memory from within. Commonly the aphasia is purely amnesic: only in a few cases is it also agnostic.

Curious are the tricks that may be played upon an individual by a simple amnesia of nouns. The name of some familiar friend, or of some familiar place, may, for the moment, be forgotten. This is so common as to be scarcely pathological. But there is usually something pathological in the case, if the individual, even for a moment, forget his own name, or his own address. The famous case of the ambassador at St Petersburg, originally recorded by

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[1] *Proceedings of the Glasgow Philosoph. Society*, 1865–68, p. 113.

Crichton,[1] is referred to by almost all writers on aphasia. The ambassador had occasion to call at a house where he was not known to the servants. Wishing to give his name, he found, to his consternation, that he was not able, for the moment, to remember it. Whereupon he turned to his companion, and said to him, with much earnestness, "For God's sake, tell me who I am."

Aphasia and other Speech Troubles caused reflexly by Irritation of certain Peripheral Nerves.

The form of reflex irritation most familiarly recognised as a possible cause of aphasia is irritation of the intestines by worms, especially tape-worms or round-worms. There are numerous cases of this kind on record. It is in children that intestinal worms most frequently produce this effect, just as it is in children that fits or chorea may be due to worms. I need not give details of any of the many reported cases of this kind; but I should like here to make a brief note of a case in which a round worm in the intestine of a child produced, not only fits, but also a temporary change in the child's disposition, making him wayward and unmanageable—almost insane, in fact,—and leading him to indulge, young as he was, in the repetition of bad words, which he had, no doubt, chanced to hear pronounced by his seniors. Indeed, the child's language in his fits of excitement was described as being as foul as it could well be. It was the kind of language to which the term coprolalia has so aptly been applied.

Case VII. (*A child under the care of* Dr Burn Murdoch *at the Royal Hospital for Sick Children*). *An intestinal round-worm causing fits, wayward disposition, and coprolalia.*—The patient was a boy, aged 4. He was originally admitted into my own Ward at the Royal Infirmary, but being too young for us, he was immediately transferred, on the 10th of July 1890, to the Sick Children's Hospital; where he came under the care of my friend Dr Burn Murdoch, who has kindly allowed me to make use of his notes of the case. From the mother's account, it appeared that the boy had had an illness about the beginning of the year, during which he had a fit of some kind, which rendered him unconscious for about twelve hours. But he recovered from his illness, and remained in good health until about three weeks before his admission, when, on returning home to his parents, after a short visit to his grandmother, he was found to be greatly altered in disposition, being noisy and unmanageable, and much given to destroying things,—tearing up books in the room, for example. Twelve days before his admission, he began to suffer almost daily from fits, which occurred in groups,—the fits following each other at short intervals for two hours at a time.

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[1] *An Inquiry into the Nature and Origin of Mental Derangement*, 1798.

On admission, he was found to be a well-nourished child, but his expression was observed to be at times rather wild and fierce, and at other times rather vacant. He continued to have frequent fits. He was very restless, grimacing, and whistling loudly, and tossing about in his bed. When addressed, he sometimes spoke; but his answers were not always relevant. Occasionally he swore, using "extremely foul language, especially when interfered with." Even during his very brief stay at the Infirmary, before his transference to the Sick Children's Hospital, his language made a strong impression upon all who heard it.

I need not follow out the case in detail, but shall only say that, after Dr Burn Murdoch had repeatedly given santonine, a roundworm, 10 inches in length, was passed by the child; and that, thereafter, there was rapid improvement in all the symptoms. He left the Hospital on the 2nd of August, much improved. On the 16th, when brought as an out-patient, he had had no fit for twelve days, and was altogether much changed for the better.

The case is interesting, especially as showing how the mental functions may be disturbed, and how a kind of coprolalia may be produced, by an irritation of the intestine acting reflexly upon the brain.

That Aphasia may, in children, be due to the presence of worms in the intestine is a fact that has long been familiarly known. Cases have also been recorded in which accumulation of scybala in the large intestine had, in children, produced aphasia.[1]

From the facts adduced in this paper, it is thus evident that aphasia, and other disturbances of speech, may be due to a great variety of causes. As Kussmaul puts it, "It is self-evident that all possible morbid processes in the brain may cause aphasia. They may do this in one of two ways: either they involve directly and permanently the conducting fibres and centres of speech, or they impair their functional vigour more mediately and temporarily, by pressure, ischæmia, or collateral hyperæmia, or perhaps also by simple reflex irritation and radiation."

I have thought it well to devote a separate paper to the consideration of aphasia and other speech disturbances in relation to functional disorders of the cerebral cortex, because, in practice, these functional disturbances of speech are very common and important. They seem to me, therefore, to be well worthy of separate consideration.

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[1] For references to cases of aphasia produced by worms or constipation, see Bateman, pp. 271 and 291.

(*To be continued.*)

III.—ON DILATATION OF THE CERVIX BY CHAMPETIER DE RIBES'S BAG.

By F. W. N. Haultain, M.D., F.R.C.P.E., Lecturer on Midwifery,
Edinburgh School of Medicine.

(*Read before the Obstetrical Society of Edinburgh*, 13*th Dec.* 1893.)

Champetier de Ribes's bag, the instrument whose use it is my intention to bring before you, has been fully and carefully described in the *Annales de Gynécologie*, 1888, and has been used in France by Pinard and others with great success. For some reason or other its adoption in this country has been very limited, and here in Edinburgh I am not aware of it ever having been used at all,—a conviction which is strongly supported by the absolute want of knowledge of its existence displayed by the instrument-makers when I inquired about one eighteen months ago.

After some practical experience of its use, I have found it to prove a most useful and reliable obstetric appliance, and therefore take this opportunity of bringing it under your notice, so that perhaps I may induce some to give it the trial which I feel certain it deserves and will fully repay.

The instrument simply consists in a silk bag covered by india-rubber, which, when distended, assumes the definite shape of an inverted cone, measuring at its base about 3½ inches in diameter.

For the purpose of introducing the dilator, a pair of separable forceps have been devised, which are of great value when the initial dilatation is not greater than the diameter of a shilling; but when larger than this, the introduction of the bag can be most conveniently performed by means of a pair of ordinary curved vaginal forceps.

The not inconsiderable dimensions of the collapsed bag make it necessary that a certain amount of initial dilatation requires to be present before introduction can be attempted, the amount necessary being slightly larger than the diameter of a shilling; or, in other words, the os requires to admit one finger fairly easily.

Before introduction the bag should be crumpled into as small a compass as possible and thoroughly oiled. It is then grasped by the application forceps and slowly pushed through the cervix till at least a half has passed the os internum.

The forceps are now loosened, and partial distention (by means of warm water pumped in by an ordinary Higginson syringe) commenced; the forceps are now withdrawn and full distention completed, this being estimated by a known number of syringefuls being necessary.

As the bag distends it becomes accommodated to the surrounding parts and adapted to the existing degree of cervical dilatation existing, its curved shape allowing it easily to lie on the axis of the pelvic brim.

From the large size of the bag, the pressure on the presenting part must necessarily be considerable, and thus tend to displacement,—a disadvantage which will be considered later.

Before, however, considering in detail the advantages and disadvantages of the instrument from a theoretical standpoint, I will shortly relate three cases of abnormal labour in which I used it with marked benefit.

CASE I.—Primipara, with flat non-rachitic pelvis; C. V. 3½; membranes ruptured for two days; os uteri admits easily one finger; pains at first fitful and irregular, but for the last three hours stronger and more regular; fœtal head in transverse of pelvis movable and extended above the brim. Bag introduced comparatively easily, and in three hours expelled through cervix; forceps were now applied and delivery completed.

CASE II.—Mrs M., multipara. Membranes ruptured one and a half hour; os uteri size of florin; presentation R.M.P., with cord prolapsed and pulsating; pains strong. The cord was returned by postural method, but prolapsed again immediately. I now returned the cord again and introduced Champetier's bag, which was driven through cervix in one and a half hour; version was then at once performed, and a living child born.

CASE III.—Multipara; sixth child; vertex R.O.P.; membranes ruptured four days; pains irregular, weak, and painful; os uteri slightly less than florin, the edges being thick, hard, and irregular. Dilator introduced, immediately after which a few strong pains occurred, but no appreciable progress could be noted after three hours. Intermittent tractions on the bag were now attempted, and considerable advancement in dilatation occurred; but as the patient became fretful, I put her deeply under chloroform and assisted dilatation with the fingers, the distended bag forming a most excellent point of resistance for this manœuvre. In half an hour the os was fully dilated, and subsequent delivery by forceps easily accomplished.

As a dilator the bag seems to be formed on scientific principles, as from its shape it closely corresponds with the normal bag of forewaters, for which it forms a most excellent substitute, as I have practically proved on more than one occasion.

But as a simple substitute for the normal membranes its benefits as a dilator are by no means exhausted, because when rapid and more forcible dilatation is required it is of great service in forming a most efficient point of resistance to the finger in performing digital dilatation.

Further, by making traction on the bag considerable assistance can be given to feeble uterine contractions, and even dilatation attained where they are entirely absent.

Although the main function of the instrument is as a dilator, it must undoubtedly act beneficially in cases where the membranes have been long ruptured, by preventing compression of the soft parts between the presenting head and the pelvis, through forming a basis upon which the fœtal head rests. This action upon the presenting part where exaggerated, although forming one of the stated objections to the use of the bag, must be looked upon in some cases as of distinct value, as is well exemplified in Case II., where compression of the cord was thus avoided.

To discourse fully upon the various conditions in which this instrument may be indicated is of course entirely beyond the scope of this paper; but there are some special indications which, I think, are worthy of special notice.

First, as an inducer of premature labour the bag undoubtedly owes its existence, and in this operation it has been very largely employed in France by Pinard and others, who have fully discussed its merits.

The statistics show that in 40 cases, in 23 the child was born in from six to twelve hours; in 7, from twelve to twenty-four; in 10, from twenty-four to forty-eight. These, if compared with similar statistics compiled by Leopold, which show over eighty hours as the average duration required for expulsion by Krause's catheterization method, are at once striking and convincing, especially when it is known that the risks to the mother and child are in no way increased. Naturally, before introduction a slight amount of dilatation is required. This in multiparæ can easily be performed by the finger, but in primiparæ requires more energetic measures by means of tents, or Hegar's and other dilators.

In the introduction of the bag in these cases it is quite unnecessary that the membranes be ruptured, but it seems to me that rupture of the membranes must at all times be safer, as separation of the placenta and hæmorrhage would otherwise tend to result. By rupture of the membranes, on the other hand, no harm can be done, and the liquor amnii is prevented from escaping, through the plugging of the cervix by the dilator, till the os is fully dilated.

In abnormal labour its indications are manifold, but its adoption would be specially valuable in—

1. Accidental hæmorrhage. Here the membranes can be ruptured and at the same time an efficient substitute employed, by means of which rapid dilatation can be attained.

2. In contracted pelves of minor degree. Here usually the membranes rupture early, and the head is prevented from descending to form a dilator for the cervix, but, resting on the brim, compresses the intervening soft parts.

By the introduction of the dilator not only have we an efficient substitute for the dilating bag of forewaters, but a distinct body to prevent the head from pressing injuriously.

3. In shoulder presentations with ruptured membranes and partially dilated cervix, with prolapse of the arm.

Here, unless severe and prolonged impaction is present, one can usually replace the arm; and I can think of no more rational method of treatment, where immediate version is denied to us, than introducing this dilator, thus at the same time preventing impaction and hastening dilatation, to allow of subsequent internal version.

4. In cases of prolapsus funis where the cord can be replaced and subsequent pressure upon it prevented till full dilatation of the cervix allows of rapid delivery by whatever means thought expedient. (Case II.)

Doubtless we have had before us an instrument of similar characteristics in the Barnes's fiddle-shaped hydrostatic dilators, but Champetier's bag seems to me a distinct improvement on these.

1. In that it assumes a definite unchangeable shape. Barnes's, on the other hand, from their india-rubber composition become easily moulded and ballooned in an irregular manner, which renders them frequently inefficacious.

2. From the strong nature of Champetier's bag it can be made to form an excellent point of resistance for rapid and more forcible dilatation by the finger.

3. When once introduced all further trouble is avoided, while with Barnes's various sizes have successively to be adopted.

4. If on introduction in inducing labour the membranes be ruptured, Champetier's dilator retains the liquor amnii till full dilatation is accomplished, and subsequent manipulations are easy, while with Barnes's bag the liquor amnii must escape when one bag is substituted by another.

In thus strongly advocating the benefits of this form of dilator, I cannot, on the other hand, abstain from considering its disadvantages and dangers, if such there be. In so doing, it cannot be forgotten that the great disadvantage of the instrument is its large size vertically, by which on distention it must necessarily displace, to some extent, the presenting part. This is usually no doubt but trifling, and can generally be corrected by external manipulation, but it seems to me a disadvantage which could by some means be corrected,—as, for instance, by making the base of the bag concave instead of convex. This, however, I must leave to the inventive genius of some one more qualified than myself in such matters.

As regards any special danger in using the dilator, the only one which suggests itself strongly to my mind is the introduction of the bag in cases where after prolonged labour the lower uterine segment has become much thinned; here its introduction may be the means of causing rupture of the uterus, otherwise its employment under ordinary antiseptic precautions seems at all times safe.

From the very limited experience of the practical working of the instrument which I have had, it may seem premature to have thus dilated so freely upon it; but the little experience has so convinced me of its advantages as a valuable and scientific obstetric appliance, that I have taken this early opportunity of bringing it more prominently before your notice, so that perhaps some other Fellows of the Society may be induced to try it, and thus more rapidly extend its practical considerations in a manner which must necessarily be acquired but too slowly by one's self.

IV.—ON A DEFINITE FORM OF SKIN DISEASE ALLIED TO ERYTHEMA AND URTICARIA.

By W. Ramsay Smith, M.B., C.M., B.Sc. Edin., Rhyl, North Wales.

(*Read before the Section of Dermatology at the Annual Meeting of the British Medical Association at Newcastle, August* 1893.)

During the past three years I have had many opportunities of noting the occurrence and studying the phenomena of a peculiar form of skin disease, so well marked in its symptoms, and so definite in its course, as almost to warrant a distinctive name. The facts I have noted from time to time, and the histories I have collected, are sufficiently interesting to justify me in laying them before the profession. I can perhaps best give an account of this disease by adopting the narrative form, and recording how it came under my observation.

The first time I saw the rash was on an infant six months old. The eruption, which partook of the nature of an erythema or an urticaria, was distributed pretty much all over the body, but was specially abundant in a zone round the upper part of the abdomen. The spots were single, as a rule, although here and there some were so close as to appear confluent. The appearance of the spots raised a strong suspicion that they might be due to the bites of insects. The boy had been in the garden playing among grass, and several of the spots had a central mark closely resembling the injury inflicted by a sting or a sharp pair of jaws. Subsequent observation convinced me that this theory was untenable. Some of the spots had no such mark, but were really wheals. The majority, however, consisted of white or very pale pink spots, varying in diameter from an eighth to half an inch, becoming red within an hour or two, and then fading away in four or five days,—other crops appearing in the meantime, and running a similar course. Some of the " spots " became hard and shotty in the skin; some, especially on the dorsal aspect of the fingers and toes, became almost warty, and remained for a week or more; and others became vesicular, and burst, exuding a clear coagulable fluid. The skin, in these cases, would take two or three weeks to assume its normal appearance. Intense itchiness of the skin, and a considerable amount of constitutional disturbance, were associated with the appearance of the rash. The attack passed off, but recurred after a few weeks, when the same train of symptoms was repeated.

No hypothesis I could frame would explain all the facts. One theory after another broke down on being tested by some new fact elicited in the course of observation; and no light was cast upon the subject until I had an opportunity of observing the disease in other patients.

When the boy was about two years old I had an opportunity of observing and studying the disease in his sister, an infant of about four months old. The same train of symptoms was exhibited in her case as in her brother's, and, strangely, both children suffered from attacks at the same time. One was being suckled, the other was being fed on a mixed diet, so that food, though not feeding, as a cause of the disease was to a certain extent put out of court. For the past eighteen months I have had those two children under constant observation, and during that time I have observed many attacks on both (about twelve or fifteen in all, and more frequently in summer than in winter); but I have never seen one attacked by the disease without the other being attacked too at the same time, or within a day or two of the time.

A study of the conditions under which the disease occurred established a few more points, one of which in particular I think very important,—that an attack, in the case of the boy, was almost always preceded by an ebullition of good spirits, which gave place to a nerve storm; the boy would become excited, walk or strut about, throw his arms about him; then this exuberance of good nature would pass into an almost entire loss of control over his actions and speech, and then in a few minutes the rash would appear on his body and limbs. The girl did not show the same amount of excitement and disturbance; but she was naturally less nervous and less excitable than her brother.

Careful observation of the phenomena of the disease manifested in these two children gave me an indication what to look for in other patients similarly affected; and during the past twelve months I have met with many cases, all of them presenting the same broad features, and differing only in detail. I select one or two from my note-books.

CASES I. and II.—Twin girls, aged 6 months. On account of the character of many of the spots, and the occurrence of the rash simultaneously in both infants, the parents were almost forced to the conclusion that the eruption was caused by bites of insects. The eruption in its course and distribution very closely resembled the eruption in the first case I have described above.

CASE III.—Girl, aged 13 years. The eruption shows a very definite distribution. The rash appears on a zone on the body corresponding to the course and distribution of the ninth, tenth, and eleventh intercostal nerves; also on the shoulders, especially over the clavicles, and on each side of the sternum corresponding to the terminations of the intercostal nerves. The rash is almost entirely absent from the arms and legs.

Case IV.—Woman, aged 48 years, stout, flabby, but active; menstruation stopped at 34. The rash is all over the body, including the scalp and the hands and feet,—the soles of the feet alone being unaffected. The eruption comes out after the patient is heated. The skin is very itchy,—so bad, in fact, as to keep the patient out of bed all night, and walking up and down the floor almost naked in order to obtain some relief. The arms and hands swell up before the fire. The rash may be bad all night, and go away to a very great extent during the day. The patches are unusually large, most of them being of the size of a florin; some are much larger, some smaller.

The rash appeared for the first time about a year ago. The spots were then small—about the size of peas and beans, none so large as a florin—and were confined to the waist, and were intensely itchy; afterwards they appeared on the backs of the hands, then over the whole body. The scalp suffered severely, and often broke with the violent scratching it was subjected to.

Case V.—Man, aged 63; had been in India; had lumbago ten years ago. Rash first appeared about that time. The rash began on the hands and neck, then appeared pretty much all over the body, and was well marked around the upper part of the abdomen. The crops last usually a couple of days. He has not noticed them remain so long as four or five days. He feels sore before the eruption appears, especially on the head. The spots pass through the white and red stages, but never form blebs.

To summarize the observations on this disease, and to state the inferences made from these, I would say that I look upon the affection as a constitutional one, with a local manifestation depending on the condition of the nervous system. The appearance of the rash is preceded by a certain amount of general constitutional disturbance, accompanied by a feeling of heat and itching locally. The rash may occur on any part of the body, but seems to select certain parts more than others,—*e.g.*, a zone on the upper part of the abdomen and the limbs. The character of the rash varies, but every variety may be seen on the same subject at one time. The appearance at first is usually that of wheals of a whitish or pale pink colour, about a quarter of an inch in diameter. In a few hours this appearance changes. The "spots" become red and erythematous; some of them may become papular, hard, and shotty; others, especially those on the dorsal aspect of the digits, may present the appearance of blebs, and exude a clear fluid after bursting. The size and number of the spots may vary in different individuals, and on the same individual both at the same time and in different attacks. Sometimes the whole body may be covered from head to foot, scalp included, with large irregular erythematous patches; but usually the spots are small, single, and confined to particular select areas. And I have noted one case in which all the train of symptoms of the disease is followed usually by the appearance of only one isolated spot. During the first day or two of the rash there is usually a great degree of local uneasiness and itching. This becomes less from the third to the fifth day, but in the meantime fresh crops may appear with all the associated symptoms. The papules usually take two or three weeks to disappear.

One thing impressed me very strongly during my early study of this disease, and that was its epidemic character. Individuals subject to the disease living far apart were attacked by it at the same time; and if it appeared on one inmate of a household the other inmates that were liable to it usually had an attack within a couple of days.

As regards its geographical distribution, I thought at first that it was confined to certain definite areas, since I had seen no cases of it outside certain localities. I still believe that the influence of locality may prove to have much to do with its incidence; but the following facts have to be considered in this connexion. The two little patients I referred to in the beginning of this paper were attacked with the disease on removing from Edinburgh (their native place) to Rhyl in North Wales; and in one week at Rhyl I saw three cases—two children from Birmingham, who had suffered from the disease there, and an adult, a native of the place.

As to age and sex distribution, all I can say is that the large majority of cases I have seen have been in female children.

With regard to treatment, I may say with confidence that I have heard of almost every known local application having been tried to relieve the intense itchiness and pain of the disease. Of local remedies I have found vinolia cream most useful in the early stage, when the spots have just appeared and are white in colour. This seems to relieve the itchiness of the spots and of the surrounding skin, and so to prevent the appearance of fresh spots, which was an almost certain consequence of scratching or rubbing. In the later stages, when the spots have resumed the erythematous appearance, I have found a 25 per cent. ichthyol and lanoline ointment very effective. These are almost the only local remedies I now use; and even these do not always succeed. Constitutional treatment is of paramount importance, since derangement of any of the bodily systems seems to dispose to an attack. In children most benefit seems to arise from a smart purge of calomel. I have tried quinine in large doses at the beginning of an attack, and also antipyrine, both with some degree of temporary advantage, but I put most trust in the efficacy of calomel. In adults the disease is often very troublesome, and sometimes the treatment is very prolonged and the improvement very slow indeed.

V.—RATE OF FERMENTATION OF SUGARS.

By W. G. Aitchison Robertson, M.D., D.Sc., F.R.C.P.E.

(*From the Physiological Laboratory, University of Edinburgh.*)

Most of the sugars undergo certain fermentations, the chief of these being the lactic, butyric, and the alcoholic or vinous.

In order to determine the rate at which fermentation occurs in the commoner varieties of sugar, I performed the following series of experiments:—I made 5 per cent. solutions in distilled water of chemically pure samples of cane sugar, invert sugar,[1] lactose, dextrose, maltose, and lævulose. 100 c.c. of each of the above solutions were placed in separate flasks, and a measured quantity of the fermenting agent having been added to each, they were placed in a warm chamber and kept at a uniform temperature of 38° C. The solutions were tested at definite intervals, and the amount of fermentation that had taken place in each was estimated.

I. Lactic Acid Fermentation.

To each of the flasks containing 100 c.c. of the solution of sugar, 10 c.c. of sour skim-milk filtrate were added. Skimmed milk was employed, to obtain as pure a lactic fermentation as possible. When ordinary unskimmed milk becomes sour, the fat of the milk is apt to undergo butyric fermentation. The fermentative process is thus less simple with unskimmed than with skimmed milk. Even with this precaution, however, lactic fermentation gives rise to the production of small quantities of butyric and carbonic acids, showing that it is not a simple splitting of the milk sugar into lactic acid; not simply $C_6H_{12}O_6 = 2C_3H_6O_3$.

Immediately after the addition of the sour-milk filtrate to each of the saccharine solutions I estimated the degree of acidity. I calculated it as lactic acid, and have termed it the *initial acidity.* During the succeeding four days, the flasks were kept at a constant temperature of 38° C., which has been found the most suitable for promoting the growth of *bacterium lactis.* The percentage of acid produced in each saccharine solution was estimated at intervals, and the results are given in Table I.

[1] The invert sugar was made by rendering the 5 per cent. solution of pure cane sugar slightly acid by the addition of sulphuric acid (the most powerful acid in causing inversion). The mixture was then kept at a temperature of 170-180° F. in a water bath for three hours. After allowing it to cool the loss of bulk through evaporation was replaced, and it was rendered neutral by adding a few drops of caustic potash solution. Invert sugar is said to consist solely of equal parts of dextrose and lævulose; this is denied by other observers, however.

LACTIC ACID FERMENTATION.

TABLE I.—*Percentage Amounts of Acid formed in Stated Periods.*

Hours.	Cane Sugar.	Invert Sugar.	Lactose.	Dextrose.	Maltose.	Lævulose.
Initial Acidity	0·0639	0·0639	0·0639	0·0639	0·0657	0·0684
2	0·0639	0·0657	0·0648	0·0657	0·0666	0·0702
4	0·0639	0·0670	0·0657	0·0675	0·0669	0·0711
8	0·0702	0·0729	0·0666	0·0684	0·0693	0·0738
24	0·0711	0·0774	0·0684	0·0693	0·0702	0·0756
30	0·0738	0·0954	0·0756	0·0765	0·0756	0·0873
72	0·1044	0·1062	0·1242	0·1152	0·0972	0·3375
96	0·1386	0·135		0·189	0·1233	0·8181

In Table II. the amounts of lactic acid formed in each solution in definite periods are enumerated.

TABLE II.—*Total Percentage Amount of Acid formed in Stated Periods.*

Hours.	Cane Sugar.	Invert Sugar.	Lactose.	Dextrose.	Maltose.	Lævulose.
2	0	0·0018	0·0009	0·0018	0·0009	0·0018
4	0	0·0031	0·0018	0·0036	0·0012	0·0027
8	0·0063	0·0090	0·0027	0·0045	0·0036	0·0054
24	0·0072	0·0135	0·0045	0·0054	0·0045	0·0072
30	0·0099	0·0315	0·0117	0·0126	0·0099	0·0189
72	0·0405	0·0423	0·0603	0·0512	0·0315	0·2691
96	0·0747	0·0711	—	0·1251	0·0576	0·7497

These experiments show the following results:—

1. *Cane Sugar.*—A considerable time elapses before the commencement of its change into lactic acid. During this period it is probably undergoing inversion. Thus, until the end of the fourth hour there is no increase of acidity. The fermentation then begins and proceeds slowly until the thirtieth hour, when it becomes rapid, and a large amount of acid is produced.

2. *Invert Sugar* resembles dextrose in soon undergoing lactic fermentation. Like the sugars mentioned below, it has no resting period such as that observed in the case of cane sugar, but begins to ferment at once. Up to the thirtieth hour the fermentation is much more rapid than in the case of cane sugar, but after that period they nearly correspond in the change they undergo.

3. *Lactose.*—This sugar begins to ferment at once, but only a small percentage of acid is formed up to the end of the twenty-fourth hour, after which the change becomes very rapid. Probably the sugar splits up into glucose and galactose during the early hours, and these in turn undergo lactic fermentation, as happens with cane sugar.

Milk sugar and maltose seem to undergo an equal degree of fermentation up to the twenty-fourth hour. By the seventy-second hour, however, the lactose has yielded almost twice as much lactic acid as the maltose.

4. *Dextrose* undergoes a slowly progressive fermentation during the early hours. After the thirtieth hour, however, the change becomes rapid, and at the fourth day this sugar is found to have undergone a greater degree of change than any of the others, with the exception of lævulose.

5. *Maltose* is apparently less easily and less rapidly fermented than dextrose.

6. *Lævulose* very soon undergoes a marked conversion into lactic acid. Up to the twenty-fourth hour it yields as much lactic acid as cane sugar does. When dextrose undergoes alcoholic fermentation induced by yeast it is more rapidly fermented than lævulose. It is precisely the reverse when these two sugars are subjected to lactic acid fermentation; in that case, the lævulose ferments much more rapidly and to a much greater extent than dextrose. The fermentation of lævulose by the lactic acid ferment is remarkable, inasmuch as it yields about five times as much lactic acid as is yielded by any of the other sugars in the same period of time.

At the end of the third day the sugars may be arranged in the following order as regards the amount of fermentation which they have undergone:—1. Lævulose; 2. Lactose; 3. Dextrose; 4. Invert Sugar; 5. Cane Sugar; 6. Maltose.

II. Butyric Acid Fermentation of Sugars.

In order to induce this fermentation, I added two grammes of well-pounded and thoroughly mixed old cheese (free from mould) to each of the flasks containing 100 c.c. of the five per cent. solutions of the sugars. The initial acidity was first estimated, and they were then placed in the warm chamber and kept at 38° C. as before.

The butyric ferment acts best at a temperature of 35–40° C. The change resulting from the addition of cheese to saccharine solutions is not pure butyric fermentation, but also, to a lesser extent, lactic fermentation, and this is specially true as regards the earlier part of the process. The change, however, results in the production of large quantities of butyric acid, and for practical purposes it may therefore be regarded essentially and almost entirely as butyric fermentation.

The results of these experiments are shown in the two following tables:—

BUTYRIC ACID FERMENTATION.

TABLE III.—*Percentage Amounts of Acid formed in Stated Periods.*

Hours.	Cane Sugar.	Invert Sugar.	Lactose.	Dextrose.	Maltose.	Lævulose.
Initial.	0·014	0·0264	0·0308	0·026	0.0255	0·044
2	0·0536	0·0545	0·0598	0·0572	0·066	0·0809
4	0·0589	0·0616	0·0668	0·0624	0·0686	0·0862
24	0·114	0·139	0·1082	0·1364	0·1399	0·232
48	0·227	0·2657	0·2024	0·387	0·4347	0·6652
72	0·447	0·440	0·3256	1·490		

TABLE IV.—*Total Percentage Amounts of Acid formed in Stated Periods.*

Hours.	Cane Sugar.	Invert Sugar.	Lactose.	Dextrose.	Maltose.	Lævulose.
2	0·0396	0·0281	0·029	0·0312	0·0405	0·0369
4	0·0449	0·0352	0·036	0·0364	0·0431	0·0422
24	0·100	0·1126	0·0774	0·1104	0·1144	0·188
48	0·213	0·2393	0·1716	0·361	0·4092	0·6212
72	0·433	0·4136	0·2948	1·464		

1. *Cane Sugar* appears in this case to undergo rapid inversion and subsequent fermentation, for, at the end of the second hour, a considerable amount of butyric acid has been formed (0·0396 per cent.). This sugar had undergone no change by the end of the second hour in the lactic fermentation. At the end of the third day more butyric acid had been formed from cane sugar than from invert sugar.

2. *Invert Sugar* begins at once to undergo butyric fermentation, but more slowly, and to a less extent than cane sugar.

3. *Lactose.*—In this sugar also the change seems to begin at once, but the after-progress is slow and never reaches a great amount,—the acid forming at the seventy-second hour only 0·2948 per cent. At the same period the cane sugar solution has been fermented to the extent of 0·433 per cent., and dextrose 1·46 per cent.

4. *Dextrose* begins to ferment at once, and the change proceeds slowly until the end of the second day, when the further progress becomes greatly accelerated.

5. *Maltose* begins to ferment at once, and, up to the end of the fourth hour, it suffers change to a greater extent than any of the other sugars, with the exception of cane sugar.

6. *Lævulose* also begins to ferment at once, and until the end of

the fourth hour the rapidity of its butyric change runs somewhat equally with that of cane sugar. After this period, however, the production of butyric acid from lævulose proceeds at a great rate, till, at the end of the second day, it far exceeds the amount produced from any of the other sugars.

At the end of the second day the sugars may be arranged in the following order as regards the amount of change they undergo when acted on by the butyric ferment:—1. Lævulose; 2. Maltose; 3. Dextrose; 4. Invert sugar; 5. Cane sugar; 6. Lactose.

III. Alcoholic Fermentation of Sugars.

This was induced by adding 2 c.c. of fresh beer yeast to each flask containing 100 c.c. of the 5 per cent. solutions of the sugars.

The specific gravity of each solution was determined, and all were kept at 38° C. for the next three days. The specific gravity of each solution was taken with a hydrometer (and also by the method of weighing) at intervals during the next three days, care being taken to previously cool them to a temperature of 15°·5 C.

The following table gives the results:—

Alcoholic Fermentation.

Table V.—*Alcoholic Fermentation of Sugars as indicated by the Specific Gravity.*

Hours.	Cane Sugar.	Invert Sugar.	Lactose.	Dextrose.	Maltose.	Lævulose.
Initial Sp. Gr.	1017	1020	1017·5	1017·5	1017·7	1013
2	1014·7	1016	1017·2	1014·5	1015	1008·3
4	1014	1014	1017	1013·5	1012·5	1006
24	1008·7	1008·7	1017	1006·7	1005·8	1000·46
48	1003·2	1005·2	1017	1003·5	1000	1000·092
72	1002·2	1002·3	1017	1003	1000	1000·092

Table VI.—*Degrees of Specific Gravity lost during the Alcoholic Fermentation.*

Hours.	Cane Sugar.	Invert Sugar.	Lactose.	Dextrose.	Maltose.	Lævulose.
2	2·3	4	0·3	3	2·7	5·3
4	3	6	0·5	4	5·2	7
24	8·3	11·3	0·5	10·8	11·9	12·54
48	13·8	14·8	0·5	14	17·7	12·908
72	14·8	17·7	0·5	14·5	17·7	12·908

1. *Cane Sugar* undergoes a rapid inversion, and the resulting products ferment quickly,—the solution having lost 2°·3 of specific gravity in the course of the first two hours. At the end of the third day, however, it has not undergone so great a degree of fermentation as the solution of invert sugar. On testing the solution 120 hours after the beginning of the experiment, the specific gravity was 1000·2, and gave only the faintest trace of reduction of the cupric oxide from its alkaline solution.

2. *Invert Sugar* being ready to undergo immediate fermentation, the fall in specific gravity begins at once, and steadily progresses, the loss in specific gravity being greatest in the case of this sugar. Maltose is very similar to invert sugar in its rate of fermentation, and both have suffered an equal loss in specific gravity at the seventy-second hour.

The invert sugar solution caused a very faint reduction of cupric oxide when tested 120 hours after the observation began, but the amount was insufficient for quantitative estimation.

3. *Lactose* did not undergo alcoholic fermentation at all, there being only a few bubbles of carbonic acid gas evolved during the first hour or two of the experiment. The trifling loss in specific gravity observed in the experiment probably resulted from some impurity in the sugar. When tested after the lapse of 120 hours, it was found still to contain as much as 4·82 per cent. milk sugar.

4. *Dextrose.*—This sugar resembles cane sugar as regards its proneness to undergo alcoholic fermentation. No sugar was found in the solution when tested by Fehling's solution 120 hours after the beginning of the experiment.

5. *Maltose* undergoes a rapid and high degree of fermentation. It reaches its highest limit (loss of 17°·7) in 48 hours. All sugar had disappeared from the solution when tested 120 hours after the initial specific gravity had been taken.

6. *Lævulose.*—This sugar begins to ferment more rapidly than any of the others. It falls far short of some of the other sugars, however, in the extent to which it undergoes fermentation. The solution contained no sugar when tested 120 hours after the beginning of the experiment.

The following is the order as regards the amount of alcoholic fermentation which the above sugars were found to have undergone at the end of the third day:—1. Maltose; 2. Invert sugar; 3. Cane sugar; 4. Dextrose; 5. Lævulose; 6. Lactose (scarcely changed).

PRACTICAL DEDUCTIONS.

The practical deductions from these experiments may be briefly stated.

In cases of dyspepsia there is usually much delay in the absorption of carbohydrates, even when digested. They are consequently exceedingly prone to undergo fermentation, and this is specially apt to occur if the carbohydrate be in slight excess.

In that variety of dyspepsia accompanied by lactic fermentation, the use of those sugars which rapidly undergo the lactic change, viz., dextrose, lævulose, and invert sugar, is contra-indicated, while the moderate use of cane sugar, maltose, and lactose may be allowed.

In those cases of dyspepsia where butyric fermentation is prominent, milk sugar would seem to be the most suitable, as it is least easily changed by ferment. On the other hand, maltose is very readily changed, as the other sugars also are to a lesser degree.

Lastly, in dyspepsia associated with the alcoholic and acetic acid fermentations, cane sugar, dextrose, maltose, and lactose may be allowed in small amounts; while invert sugar and lævulose should be forbidden. Lactose, however, is the sugar to give in this condition, as it is not at all acted on by the alcoholic ferment.

These theoretical deductions have been supported by clinical observation in the case of cane and invert sugar. I leave it for future investigation to show whether they are true as regards the other sugars.

VI.—PROLAPSE OF THE BLADDER DURING PREGNANCY AND PARTURITION.

By James Ritchie M.D., M.R.C.S. Eng.

(*Read before the Obstetrical Society of Edinburgh*, 10*th January* 1894.)

A lady to whom Dr James Ritchie expected to be called for her first confinement at the end of last June, sent for him on the 20th of that month. For some time she had difficulty in walking in consequence of something which came down soon after she got out of bed in the morning. It had existed in a less troublesome degree for a longer period; it disappeared soon after she lay down, and gave no trouble overnight, but shortly after rising it descended, interfering with walking, and while it remained down there were frequent calls to pass urine.

She was 28 years of age, well built, healthy looking, dark hair, and with a good complexion. On examination there was found projecting from the vulva a rounded swelling about the size of a Tangerine orange; it was not tender, its walls seemed to be of equal thickness all round, it was easily pushed up into the vagina, and was found to consist of the anterior wall of vagina and the posterior wall of bladder. There was no tendency to a recurrence of the protrusion while the recumbent posture was maintained, but it reappeared readily when a bearing-down effort was made in the standing position. The uterus was not abnormally high up, and the os was readily reached by the examining finger; there was, however, a considerable degree of laxity of the lower portion of the abdominal wall.

The patient was advised to maintain the recumbent position as much as possible.

Nine days later, Dr Ritchie was called to the confinement. The bowels had been relieved before his arrival. There was nothing unusual to note during the first stage, either as to frequency of micturition or the character of the pains. As soon as the head began to advance, the bladder was pushed down before it with each pain, and would have protruded externally, but counter-pressure was made with the fingers on the part which tended to prolapse during the pains, and when the head was sufficiently low the prolapsed structures were with some difficulty, but with care, pushed above it, and after this the head descended more readily. The further course of the delivery was quite normal. During the first twenty-four hours the urine required to be drawn off twice. For a day or two there was a little difficulty in starting the process of micturition, but since that time there had been no trouble. The patient was kept in bed for three weeks, and although, when she first got up, she experienced a feeling of fulness at the vaginal orifice, there never was any protrusion nor inconvenience, and the functions were now all normal.

As this case has certain points of peculiarity, it was thought that it might prove interesting to the Society.

On looking into the literature relating to displacements of the bladder, one is struck with the great difference in the importance which seems to be attached to it. In some of the text-books it is merely mentioned as being a possible cause of difficulty; in others it has a very considerable amount of space devoted to it. In Sir James Y. Simpson's *Selected Obstetrical and Gynecological Works* a very good synopsis of the subject is given in the lecture-notes at the commencement of the volume.

Although there are many recorded cases of partial prolapse at or near the full term of pregnancy, there are comparatively few in which there was a hernial protrusion as in the one above described.

As recently as 1863 W. H. Broadbent stated (*Obstet. Trans.*, Lond., vol. v., p. 44) that he did not find in systematic works on midwifery or in obstetrical transactions any complete account of the disturbing influence which derangement of the bladder seems to exert on the first stage of labour. After describing what had been previously recognised, he divided the conditions of the bladder which he found to interfere with the first stage of labour into four classes—

1. Complete prolapse, with or without distention.
2. Partial prolapse, *i.e.*, where the fundus remains between the uterus and symphysis pubis.
3. Distention while *in situ.*
4. Irritability.

In relation to the *time* of its occurrence and the kind of case in which prolapse is most common, Broadbent states that it does not occur suddenly during labour, but is in most cases present during impregnation, as a result usually of repeated child-bearing. It may give rise to little or no inconvenience during pregnancy, but at any time during the later months the bladder may become distended, false pains of great severity may be set up, and labour even induced prematurely. Ramsbotham (*Med. Times and Gaz.*, 1859, vol. i., p. 4) states that in all the cases which he had seen the patients had borne children before; that three-fourths of them had slightly diminished conjugate diameters at the brim of the pelvis; that all of these cases but one had to be delivered with long forceps. But in only one case had he found prolapse of the bladder before the onset of labour,—that is, during the latter part of pregnancy.

In the case recorded by Dr Ritchie the patient was a primipara, who was well formed, had no contraction at the brim; the natural powers were sufficient to expel a large well-formed child. The prolapse had lasted for some weeks before the onset of labour.

As to the *symptoms*.—Both of the above-mentioned authors describe these as being very distressing, consisting of painful sensations in the lower part of the abdomen and external genitals, constant desire to micturate, inability voluntarily to void urine, sometimes involuntary escape of urine, slow dilatation of the os uteri, greatly protracted labour and much unnecessary pain. Broadbent also states that the labour may be protracted and the suffering great when there is prolapse, even although there be no bladder symptoms, such as frequency of micturition.

In the case recorded above, the first stage of labour was quite normal, which proves that protraction of the first stage with unusual suffering are not necessary consequences of prolapse of the bladder. It is a question whether these writers have sufficiently discriminated between the influence of the various disturbing elements present, viz., prolapse, distention, irritability of bladder. Simple distention without prolapse is known to cause suffering and delay, and irritability and tenderness of the bladder often cause much suffering, even when there is neither prolapse nor distention. Croom (*A Study of the Bladder during Parturition*, 1884) has shown how the bladder is affected in the first stage of labour, viz., 1*st*, By pressure upon it in consequence of what has been called the form—restitution power of the uterus, by means of which the fundus uteri is drawn forwards and downwards; this will be greatest when the abdominal walls are tense and the membranes unruptured, and the amount of liquor amnii great. 2*nd*, A greater amount of pressure is induced by the stretching of the cervix; the long fibres of the uterus draw upwards the cervix, and along with it the bladder, causing direct pressure on the viscus. If the bladder is irritable, pressure in these two ways will cause much suffering. Some of the cases recorded as partial prolapse without retention would have been better classed as cases of tender and irritable bladder.

With the *diagnosis* of the above case there was no difficulty; but in partial prolapse, when the vagina is filled with a distended bladder, if care be not taken mistakes might arise. Hamilton, in his lectures, recorded a case in which the bladder was punctured under the impression that the operator was evacuating the liquor amnii. Merriman, in a synopsis of the various kinds of difficult parturition, also records a similar case.

The *treatment* calls for no special remark, unless it be that in all cases of protracted labour, and in all cases in which the suffering seems to be out of proportion to the amount of work done, the condition of the bladder should be investigated with great care. If there be irritability of the bladder, probably small quantities of chloroform will relieve suffering and hasten the delivery. If the bladder be distended, of course it must be emptied by means of the catheter, and it is well to remind ourselves that a much smaller quantity of urine will cause over-distention at the time of confinement than in the unimpregnated uterus. If it be prolapsed, it must be supported during the pains, and as soon as possible pushed with care above the descending head.

A very interesting case is recorded by Christian in the *Edinburgh Medical and Surgical Journal*, 1813, vol. ix. p. 281. He was called by a midwife because of delay,—the patient had been in labour from Saturday morning till Monday morning. He found prolapse of the bladder, drew off a pint and a half of urine; the head descended quickly to the perinæum; he left the midwife to finish. Next morning he was called to the same patient; he found that things had gone on as he had anticipated, but there was a second child; he found a state of matters similar to that which existed at his first visit; he drew off a large quantity of urine, and three pains brought the second child into the world.

Ramsbotham states that a chronic prolapse is likely to follow its accidental descent in labour. There are several recorded cases in which this unfortunate sequel did not result, and in the one reported above there has been no tendency to recurrence up to the present time. Doubtless the indication is to keep such a patient in bed for a longer time than usual..

What is the *cause* of prolapse, partial or complete?

Webster (*Researches in Female Pelvic Anatomy*, 1892) classifies the conditions which affect the lie of the viscus thus,—1. Softening and stretching of its supports; 2. Intra-abdominal pressure; 3. Weight of the uterus; and adds that the first of these probably varies considerably in different cases.

The author of this paper thinks that the position of the bladder is determined by—

1. The condition of its ligaments, true and false.
2. The pressure and traction exerted upon it by surrounding

organs. (*a.*) The weight of these organs. (*b.*) The amount of intra-abdominal pressure.

3. The fluid pressure and the amount of fluid within the bladder.

1. Not only are those portions of the recto-vesical fascia, which are called the true ligaments of the badder, of importance, but the fascia itself doubtless plays an important part in affecting the position of the bladder, and any relaxation of any of these supports would favour the occurrence of displacement. Probably, also, the superior false ligament containing the remains of the obliterated urachus has a considerable influence in supporting the fundus.

2. (*a.*) The pressure exerted upon the bladder by surrounding organs. Although the engraving of the lateral view of the contents of the male pelvis, which has been copied from Quain's *Anatomy* into other text-books, represents the distended bladder as a globular sphere, probably none of us think that in the living subject it has this shape. Drawings of frozen sections of the unimpregnated woman by Hart, and of the various stages of pregnancy by Barbour, Webster, Soffiantini, and others, show that the position and shape of the bladder is variable. At the full term, in an antero-posterior section, the cavity of the empty bladder may be represented by a straight line running almost horizontally, with a slight upward obliquity (if the body is in the erect posture) between the gravid uterus and the pubes; in other plates it is seen to lie behind the pubes, and is represented by three arms of different lengths diverging at variable angles from a common centre. The bladder is moulded by the surrounding viscera, one of the most important of these is probably the gravid uterus.

Croom has shown that in the early stage of pregnancy, when the uterus is anteverted, as it frequently is, it must often press upon the bladder so as to interfere with its distention; this accounts for the frequency of micturition which is common in the early months. If we examine diagrams of this condition at this stage, we see how prolapse of the bladder may at least be favoured. As pregnancy advances the weight of the uterus is partly sustained by the anterior abdominal wall; if that wall is lax, the position of the fundus uteri and of the whole anterior wall of the uterus will be lower than when the abdominal wall is tense, and we would expect that the ascent of the bladder between the uterus and the pubes might be rendered more difficult. But we have not only the pressure of organs from above, but the support of those structures which go to constitute the floor of the pelvis and its potential outlet. Any weakening of any part of these would favour a degree of prolapse of the bladder. Such a condition is not uncommon in elderly women who have procidentia uteri; it is sometimes the precursor of procidentia, and is most common in those in whom the floor of the pelvis is lax and the perinæum has suffered during delivery. Ramsbotham has pointed out that prolapse of the uterus is not the cause of prolapse of the bladder during delivery, because prolapse of the uterus is common, whereas the bladder affection is rare.

(*b*.) The amount of intra-abdominal pressure will of course be seriously affected by contractions of the abdominal wall. During labour we have a practical demonstration of the effect of abdominal contraction upon a prolapsed bladder, and from this we may surmise what will be the effect on the bladder of lifting heavy weights or of increasing the pressure by any means during pregnancy.

3. The pressure and the amount of fluid within the bladder. The direction in which the bladder dilates will be regulated by the usual laws of hydrostatics and hydrodynamics. The dilatation will take place in the direction of least resistance. The amount of fluid within the organ will very materially affect the influence upon it of pressure, whether by the weight of adjacent organs or of sudden force applied through them in consequence of muscular effort increasing intra-abdominal pressure, and this it does by increasing the surface on which pressure acts.

The factors which favour or produce prolapse of the bladder are several, and their action in any individual case somewhat complicated. They are chiefly anteversion of the gravid uterus, a relaxed condition of the vesical ligaments, a relaxed condition of the floor of the pelvis and its potential outlet, and strain producing sudden increase of intra-abdominal pressure, and this is more powerful when it acts upon a bladder containing a moderate amount of urine.

Part Second.

REVIEWS.

Two Great Scotsmen, the brothers William and John Hunter. By GEORGE R. MATHER, M.D., F.F.P.S.G. Glasgow: James Maclehose & Sons: 1893.

THIS very handsome volume is a credit to the Glasgow University Press, from which it comes. We might wish, indeed, that its contents were more in keeping with its appearance, and that such slipshod English as, "who presented the museum to Glasgow, which cost £100,000," did not now and then interfere with our enjoyment of the remarkable history of the two remarkable men whom the author commemorates.

It is somewhat strange, too, that in enumerating the literature to which these illustrious men have given rise, the only Scottish example Mather has been able to unearth is what he very rightly calls a "polished essay entitled 'Only an Old Chair,'" by a brother of the late Professor Goodsir, entirely ignoring the most interesting and appreciative essay "On the Life of William Hunter," which was read before the Harveian Society of Edinburgh by the late Dr Matthews Duncan in 1876, and published in this Journal in the number for June of that year.

In the beginning of the eighteenth century John Hunter was laird of Long Calderwood, a farm in Lanarkshire near East Kilbride, valued in those days at £180 a year. Mather alleges that John Hunter was a descendant of Francis Hunter, third son of Patrick Hunter of Hunterston. The Hunters of that Ilk were a very interesting and important family in Ayrshire, who have now died out; but their connexion with the Hunters of Long Calderwood is as obscure and hazy as the etching of old Hunterston, has not been proved, and is of no consequence even if it had been proved. John Hunter married a daughter of one John Paul, Treasurer of Glasgow Corporation, by whom he had ten children. William was the seventh child of the family, and was born on the 23rd of May 1718, in the farm-house of Long Calderwood, which still stands. William was educated at the parish school, and went to Glasgow University at the early age of 13½ years. His ambition at first was, like that of many another Scottish laddie, to enter the Church, and when he left college he took the very usual first step in this direction, by seeking to become teacher of the parish school. Fortunately for our profession he was rejected. Shortly after this he became acquainted with the great Cullen, then a country practitioner at Hamilton; Hunter's thoughts were thus directed to medicine, and he entered into a kind of partnership with Cullen, with the intention of allowing each other to attend the medical classes during alternate sessions. But Hunter was ambitious, and after attending the lectures of Monro *primus* for one session, he went south, taking up his abode in London, in the house of the great Smellie, a Scotsman like himself, hailing from the neighbouring town of Lanark. Six years subsequently Hunter commenced to teach anatomy, a course which not only comprised surgery and bandaging, but also all the physiology, medicine, and midwifery which most of the students of that day ever got. Hunter not only taught all this, but he also accumulated the magnificent museum of art, literature, and science, now the property of the University of Glasgow,—a museum which contains one of the finest and largest collection of coins in the world, a collection which our present University Commissioners proposed to sell in order to found a Professorship of History, giving thus a sorry exhibition of their fitness for the high functions they are called upon to discharge, for a well-arranged and extensive collection of coins is so valuable for the study of history and archæology, that not many years ago the whole early history of Britain was reconstructed from the coins of her kings by Sir John Evans. Many of the best examples of these coins Evans found in the Hunterian Museum. Ere long Hunter began to practise physic in Jermyn Street, and he speedily became the leading practitioner of midwifery in London. Doubtless Hunter's great intimacy with Smellie was the means of turning his attention in this direction; but it is equally doubtless that his strong bias to physiology also helped to guide him thither, and it is amusing to see how this peeps out in his letter to Cullen, acknowledging and thanking him for his aid in helping him to attain the high position he then occupied as having the "sole direction of Her Majesty's health as a child-bearing lady," the quaintness of the adjective being somewhat marred by the epithet to which it is applied. In 1781 Hunter succeeded the well-known Dr Fothergill as President of the London College of Physicians, and at his introductory lecture in March 1783 the summons came which terminated his honoured and successful career. William Hunter lies buried in St James's, Piccadilly, between two of his most distinguished compeers, Thomas Sydenham and Richard Bright. William Hunter was never married. In a letter to Cullen, he says, "I want to tell you about colleges, hospitals, professorships, chariots, wives, etc., etc." And his biographer says his plans as to marriage were amongst those he never completed. But thereby hangs a tale. In one of the old mansions near Edinburgh there is still preserved, let into the lid of an old workbox, a pane of glass with the following words scratched upon it:—

"Jeanie has every art to please,
She's debonnair and gay,
She's robbed my bosom of its ease,
And stolen my heart away."

Tradition has it that William Hunter met the young and lovely daughter of Professor Whytt of Edinburgh at a mansion on the banks of Loch Lomond, and falling a victim to her charms, took this method of letting her know. There were, as it happened, more Jeanies than one in the house at the time, and a dispute arose as to whom this flattering verse was applicable. Next morning the riddle was solved by the addition, by way of signature, of "The agreeable first of July," which, happening to be Miss Jean Whytt's birthday, left no longer any room for doubt for whom the compliment was meant. But to make assurance doubly sure, the elderly lover, for he must have been thirty years older than Miss Whytt, got hold of her slipper and wrote upon it:—

"Oh! to her steps a guardian prove,
Who every heart inspires with love."

So ingenious and persevering a wooer deserved a better fate.

John Hunter, the youngest of the family, was born at Long Calderwood on February 13th, 1728; at least that is the date entered in the parish register. Perhaps Hunter himself was more correct in stating it to have been on the 14th, and that is the day on which the annual oration is made at the Royal College of Surgeons. John Hunter's father died when he was ten years old, and his education practically ceased then, evidently from his own fault, as school and scholastic learning never had for him any attraction. At 17 he could neither read nor write; yet his iron will and splendid genius enabled him wonderfully, though never wholly, to repair this blunder of his early years. At first he was but a working carpenter in Glasgow. When his master failed, he set off for London to help his brother in his museum if possible; if not, to enlist. In London Hunter rose to be the first surgeon of his day, in spite of having the front of his house "adorned with sculptured lions, small pyramids of shells, and a crocodile's head with a gaping mouth." An experimental physiologist of the first rank, Hunter lost no opportunity of turning the results of his experiments on animals to the good of mankind. The most interesting of these experiments was tying the carotid artery in a buck with growing antlers, *to see what would happen,*—surely a most unjustifiable experiment from the humanitarian point of view. Yet the result was the saving of a man's limb, and probably his life, before many weeks had passed. The Italian Assalini, who saw the operation, testifies that it excited the greatest wonder and attracted the attention of every surgeon in Europe. Since those days the numbers of limbs and lives saved as the result of this unjustifiable experiment must amount to many thousands.

The magnificent museum which John Hunter collected was, after his death, purchased by the State, and is still to be seen at Lincoln's Inn Fields, an enduring monument of his untiring energy and dogged perseverance. One of the gems of this collection is the skeleton of O'Brien, a huge fellow nearly eight feet high, who had a great horror of being dissected. O'Brien made a good deal of money by exhibiting himself, and knowing Hunter's desire to acquire bodies of abnormal growth, he directed in his last will and testament that £200 should be paid to certain fishermen to take his dead body out to sea and drop it in mid-ocean. John suddenly missing his long friend, made inquiries after him, and finding he was dead and the novel arrangements he had made for his burial, he went to the fishermen and said, "I have no wish to deprive you of your £200. Go to sea, drop the body overboard according to the will, but pull it up again and bring it to me, and I will give you £500." This was done, and now the skeleton of O'Brien towers high above all the other skeletons in the museum, and with his huge slipper is not the least interesting object in it.

John Hunter married in 1771 a Miss Home, handsome and accomplished, the authoress of the well-known song, "My mother bids me bind my hair," and the centre of a radiant circle of statesmen, scientists, and wits, who were attracted to their home by her distinguished husband. She survived her husband for several years. In 1773 John Hunter had his first attack of angina, and twenty years later the end came suddenly at a stormy meeting at St George's Hospital. He left the meeting in speechless indignation, and fell dead in the arms of Dr Robertson, one of the physicians of the Hospital, who had followed him into an adjoining apartment. Hunter was buried privately in one of the vaults of St Martin's-in-the Fields. Sixty years subsequently Frank Buckland, after scrutinizing no fewer than three thousand and sixty coffins, found that which contained the remains of the great John. These were removed to Westminster Abbey on the 25th of March 1859. The College of Surgeons of England have placed a brass over these remains to "record the admiration of his genius as a gifted interpreter of the Divine power and wisdom at work in the laws of organic life, and in grateful veneration for his services to mankind as the founder of scientific surgery."

This is not the biassed opinion of compatriots. Billroth, who has so recently followed Hunter to the world of shades, says, "Hunter is one of the greatest men the English nation has produced, and by his work on *Inflammation and Gunshot Wounds* he has laid the corner-stone of modern English and German surgery."

"Few are the individuals, indeed," says Dr John Thomson, the biographer of Cullen, "of whom it can justly be said that their labour, their example, and their actual service have conferred so great benefits on science, and tended in a degree so remarkable to improve and facilitate the means of communicating the correct knowledge of the facts of anatomy and the principles of physiology and pathology as William and John Hunter. . . . Both England and Scotland owe to William Hunter and his brother John Hunter a debt which has never been repaid, and which probably is too great to be repaid. Both were in the most true sense benefactors to the human race. Both laboured, not only without public encouragement, but in the face of the greatest difficulties and the most chilling and discouraging inattention, in teaching anatomy and physiology and the just principles of pathology upon a foundation solid and durable. And both devoted, in the most disinterested manner, the pecuniary means which the exercise of their profession supplied, not in procuring expensive luxuries, not in acquiring large estates and erecting magnificent mansions, but in providing for subsequent generations the means of anatomical instruction upon the same solid foundations on which they had already taught, and the superior advantages of which they had proved by their own example."

Dr Mather's work is a most interesting memorial of these two great and remarkable Scotsmen. For a student it has two great wants: it has no index, and no reference to any authorities. We trust the book may soon appear in a second edition, in which these wants may be supplied, and the faults of style may be corrected. Evidently a great deal of research has been undertaken and a great deal of care expended, and the subjects of the book well deserve both. But to be truly worthy of those whom it seeks to commemorate the research must be capable of being followed up, and the language in which it is embalmed must be perfect, or as nearly so as possible. With all his uncouthness and defective education, John Hunter took the greatest pains to write so clearly as never to be misunderstood. But as he himself said, "When I am dead you will not soon meet another John Hunter."

Diseases and Injuries of the Teeth: a Manual of Practical Dentistry for Students and Practitioners. By MORTON SMALE, M.R.C.S., L.S.A., L.D.S., and J. F. COLYER, L.R.C.P., M.R.C.S., L.D.S. London: Longmans, Green, & Co.: 1893.

THE pathology and treatment of dental diseases now constitute a specialty recognised and taught along with ophthalmic, aural, laryngeal, and other branches as an important department of surgery. The work under notice is considerably in advance of many of its predecessors in this respect, and therefore more likely to be abreast of what is required by the modern dental student. It is an abridged but comprehensive treatise on all that he ought to know, and we can cordially recommend its perusal from beginning to end.

The introductory chapter touches upon two interesting and important points. These are, the accession of dental caries, and the question of fees befitting those services which dental patients generally expect of its practitioners. The first problem seems capable of solution only by admitting that certain occult vital as well as mere chemical or mechanical actions are at work in its production. The second inquiry is well met by the contention that it is mainly the knowledge, ability, and experience of the practitioners which patients exact, as is always exemplified in their imputations at failures of any kind; and it is for this, and not the mere work or material which may at the same time be supplied, that they ought to pay. It is skill, not merchandise alone, that they bargain for,—a commodity which, once given, cannot be returned or recalled, and is thus often filched from the practitioner, sometimes without even the imponderable honorarium of thanks.

Naturally among the first subjects discussed is that of dentition. There can be nothing particularly new in any description of this process itself; and the constitutional affections prone to accompany that period of infancy are here very properly delegated, in a great measure, to the care of the medical practitioner. Several interesting observations are, however, offered on the peculiarities of structure and form in the individual teeth themselves, induced by or associated with these conditions. And such abnormalities, as well as their treatment, are disposed of in a manner showing that experience of a valuable and extensive kind has toned and modified the teaching usually afforded in this direction. The same useful style of instruction is continued and amplified until the conclusion of the subject, on the completed eruption of both the temporary and permanent sets.

Dental caries and its different modes of treatment are explicitly described and commented on according to the author's views. These seem generally to coincide with the hypothesis that, in contradistinction to caries occurring in bone, what is called caries as occurring in teeth is not a vital affection at all, but simply the result of external agencies acting on the material of the teeth. This is a difficult position to maintain. We cannot shut our eyes to the fact that teeth manifest symptoms of vitality during the progress of caries, even in the diseased tissues themselves, as witness the sensitiveness of the affected dentine, and even apparently of the enamel in some cases. Indeed, in the author's own statement at page 180 such a concession as this is implied, as it is there admitted that in decay the portion of the dentine immediately below the enamel is at times extremely sensitive as well as the superficial layer of carious dentine. Is this not of itself an evidence of vital action? But the observations and reasoning of the authors are of too accurate and cautious a nature for them unreservedly to endorse any rash conclusion; so in their introductory remarks they allow that although "it has been proved beyond all doubt that caries is produced by external agencies, that it is caused by chemical action, and through the instrumentality of micro-organisms; yet," say they, "while this is incontestible, those who have worked so ably and well to prove the local cause have not altogether cleared the subject of its difficulties." Not the least of such difficulties seems to be arriving at anything like the satisfactory establishment of a dissociation from this disease of those undeniably vital phenomena accompanying it, and attempting its restriction exclusively to the subsequent crumbling stage of the disorganized tooth tissues under the simple process of decomposition.

Several chapters are devoted to diseases of the dental pulp, periosteum, and gum, along with one on the saliva and salivary calculus. Of course the subject of extraction is fully entered upon, although it is one bound to be treated much in the same style as is necessarily adopted in every work professing to be a manual of instructions in dental surgery. Replantation, transplantation, and implantation of teeth as modes of practice still *sub judice*, are ably and soundly discussed. While the first of these operations is under certain circumstances pronounced as justifiable, the other two are, as they ought to be, very summarily disposed of.

The weakest portion of the whole book is the short disquisition on anæsthetics. It is meagre in the extreme, and not always in accordance with what are generally considered the orthodox principles to be followed out in the exhibition of these agents. After describing the most convenient positions of the patient for extraction without anæsthetics, it seems a mistaken and a dangerous assertion to make, that with anæsthetics "the position of the patient will differ but little, if at all, from those before advocated." Surely this is not meant to apply in the use of chloroform, or even ether, where the recumbent posture is called for wherever it is possible.

The volume concludes with a *résumé* of those affections, local and general, associated with morbid conditions of the teeth and relative structures, where the aid of the physician or surgeon as well as the dentist come to be required. An excellent epitome of nearly all the diseases of this nature, with their pathology and the general principles of treatment, is given, which will be found both interesting and serviceable by the dental practitioner. The illustrations throughout the work deserve to be most favourably mentioned.

A Text-Book of the Physiological Chemistry of the Animal Body, including an Account of the Chemical Changes occurring in Disease. By ARTHUR GAMGEE, M.D., F.R.S., Emeritus Professor of Physiology in the Owens College, Victoria University, Manchester; lately Fullerian Professor of Physiology in the Royal Institution of Great Britain, etc. Vol. II.: The Physiological Chemistry of Digestion. London: Macmillan & Co.: 1893.

IT is commonly supposed that the German alone has the capacity for the painstaking care and infinite patience of research requisite for the production of a work like the present, and it must be a matter of congratulation that the author of what is undoubtedly the best and most exhaustive treatise on the subject is a fellow-countryman.

The volume deals entirely with *Digestion,* and is of the utmost value, not only to the student of physiological chemistry, but to the physician. In no other department of medicine has the latter gained so much from the labours of the physiologist and chemist. Especially is this the case as regards gastric digestion; but the increased knowledge of intestinal digestion, and of the relationships of the pancreatic secretion and bile to these changes, has also markedly influenced medical practice. In the study of digestion the physiologist has in turn been greatly aided by the physician and surgeon. The examination of the gastric contents of patients has thrown valuable light on the physiology as well as the pathology of gastric digestion; while the advances in abdominal surgery have afforded opportunities for the study of the secretion from, and of the digestive processes in, the various parts of the alimentary tract of man.

It is needless to commend to physiologists such a work. Professor Gamgee's name is alone sufficient to guarantee its value. But we desire to emphasize its importance to the physician, because we fear that, should his first glance light upon some of the more purely chemical parts of the work, he may be disposed to throw it aside as too scientific to be of practical value. It is to be deplored that the preliminary scientific education of medical men in this country is so deficient as prevent their deriving benefit from the whole of this volume; but to even the veriest ignoramus in chemistry the sections on "Gastric Digestion in Disease," on "Icterus and the Modifications in the Bile Secretion during Disease," and on "Gall Stones," must prove of value. To the educated medical man every section of the thirteen chapters into which the book is divided will be full of interest.

As to the scope of this volume, it is sufficient to say that it includes everything that is known about digestion.

To us it seems that the author has made a mistake in introducing descriptions of the structure, innervation, and mode of action of the various parts of the alimentary canal. These subjects are fully dealt with in general text-books of physiology, and their introduction here swells an already too bulky volume. We regret, too, a certain looseness of arrangement, which is certainly difficult to avoid in an exhaustive review of so large a subject, but which might have been diminished by more careful revision.

Dr Gamgee does not shrink the discussion of the many still unsettled points in the physiology of the various structures connected with the alimentary tract. Although we do not agree with all his conclusions, we must confess that his arguments are always fair, and supported with well-marshalled facts. Frequently the authority of early teaching seems too strong to allow of his giving due weight to the results of more modern research. This is especially marked in connexion with the discussion on the existence of the so-called cholagogues and on the true relationship of the bile to the economy.

One of the most interesting and valuable features is the very complete historical account of the progress of our knowledge of the various processes of digestion. This is especially good in connexion with the advances made in our knowledge of gastric digestion, and with the difficult subject of the chemistry of the products of the action of the peptic and tryptic ferments on proteids.

On the difficult question of the real nature of the pigments of the urine, the author expresses views opposed to those of Dr M'Munn; and he appears to consider that the source of these pigments is the absorbed bile pigment, although modern research has clearly shown that, even when all the bile pigment escapes by a fistula, the urinary pigment is not diminished. An admirable account of the nucleo-albumin—the so-called mucin—of the bile is given, and it is a pity that the proper name of the substance is not applied to it in the subsequent parts of the book.

In the chapter on Pancreatic Digestion the various non-proteid bodies formed by the tryptic digestion of proteids are well described. We are glad to see the formation of indol, skalot, and other similar aromatic bodies discussed apart from pancreatic digestion, and properly described as due to micro-organisms in the large intestine. In connexion with the fat-splitting ferment of the pancreas, the views of Altmann do not receive consideration, although, should these be correct, our conception of the digestion and absorption of fats must be materially modified.

Want of space forbids us to discuss the work further. But sufficient has been said to show the great value of the volume. We sincerely trust that the appearance of Vol. III. and the new edition of Vol. I. will not be long delayed.

Healthy Hospitals: Observations on some points connected with Hospital Construction. By Sir DOUGLAS GALTON, late Royal Engineers, K.C.B., D.C.L., LL.D., F.R.S., etc., etc. With Illustrations. Oxford: at the Clarendon Press.

SIR DOUGLAS GALTON, in his *Healthy Hospitals*, supplies a want much felt. He modestly terms his book a compilation of notes; and although this, in the main, is true, still the art of compiling and arranging materials derived from so many and multifarious sources, galvanizing these into life, and enunciating from them general principles which should govern hospital construction, is no mean one, and shows a grasp of the subject which few besides himself can boast of. The preliminary chapter treats briefly of hospitals historically in so far as that is necessary to show how the principles of hospital construction have developed. The indebtedness of the present system to the experience derived from the wars of the last and present centuries, particularly the latter, is freely acknowledged. In the second chapter a hospital is defined as not only a place for the reception and cure of the sick, but as a technical school in which the medical student must learn his profession, and an experimental workshop in which the matured physician or surgeon carries on scientific research. The hygienic principles applicable to hospital construction are tersely stated. Chapter third treats of sites, the principles on which they should be chosen, and the conditions which should regulate their area. Chapters four and five deal with the conditions which vitiate the air in an unoccupied room, and the quantity of air necessary to mitigate these. The question of cubic space is summed up thus: "It must be remembered that any increase in the floor or cubic space beyond what is actually required causes unnecessary outlay in first construction, and entails a continuing excess in the charges for warming and service. And it may be assumed as an axiom that, without unduly depreciating the beneficial effect of abundant air space, the frequency with which, and the manner in which, the air is changed, is a far more important point to be attended to in providing a pure atmosphere than floor space or cubic space." The part played by porosity of the materials used in building in the ventilation of buildings, is shown to be a much more important one than is generally supposed. The facts adduced by the author deserve careful consideration in connexion with the modern system of wards lined either with highly-glazed bricks with cement joints, or with polished Parian cement.

Under "Purification of Air," in the succeeding chapter, the system of washing it as adopted at the Victoria Hospital, Glasgow, under the design of Mr William Keys, is described fully, and highly commended. Among its advantages, the removal of every vestige of fog, and the introduction of the air, purified and warmed, are not the least. In the same chapter an ingenious plan, devised by Mr E. A. Cowper, C.E., for purifying the air removed from wards containing infectious cases, is described.

Chapter seventh treats of the movement of air under the heads of that caused by difference of temperature, and that caused by mechanical appliances. Descriptions and illustrations of the best of these are given. In this connexion the necessity of absolute cleanliness being maintained in the air flues is impressed. Chapters eight, nine, and ten comprise observations on warming, and the different modes of effecting this. They contain much that is valuable relative to the principles which regulate these. Among the several methods of warming large hospitals, that by steam pipes still appears to hold its own, on the grounds both of convenience and economy. In the succeeding chapter on lighting, the great importance of light as a hygienic agent, and of sunlight, especially the actinic rays of the spectrum as a germicide, are dwelt upon. In some hospital wards, we are afraid, the sun is more regarded as an intruder to be shut out by window blinds, than as a welcome guest whose path should be made straight! It is seldom enough in our northern clime that we *can* flood our wards with sunlight, and no opportunity of doing so should be lost. The author does Hygieia yeoman service in again and again pressing the claims of light. In chapter twelfth he treats of the methods in which the principles in the preceding chapters have been applied in hospitals, and illustrates these from recent examples, such as the Hamburg Hospital, the Johns Hopkins Hospital at Baltimore, the Barnes

Hospital at Washington, the Antwerp Hospital, the Victoria Hospital at Glasgow, and others. The general summing up on the subject of ventilation is, that while the method of propulsion combined with air washing, as in the Victoria Hospital, is peculiarly suited for large towns, artificial methods of ventilation appear to be falling somewhat into disrepute, and open windows and grates rising in favour. Chapters thirteen to fifteen are devoted to the ward unit, and contain much valuable information under the headings of "The Wards," "Day Rooms," and "Sun Rooms," ventilating, inlets and outlets, windows, doors, walls, floors, ward offices, and drainage. Chapter sixteen deals with the aggregation of ward units, and the principles on which these should be arranged when forming a hospital. In the following chapter the administrative buildings are treated of in two large groups, viz., rooms connected with the admission, treatment, and discharge of patients, and rooms connected with boarding the patients. Chapter eighteen contains observations on some points connected with hospitals for incurables, children's hospitals, convalescent homes, and infectious hospitals; while chapter nineteen deals with lying-in institutions, in which the necessity for great liberality in the matters of air and floor space, combined with the most scrupulous cleanliness, is strongly insisted on. Chapter twenty contains some pertinent remarks on temporary structures for hospitals.

Sir Douglas Galton, in concluding, says: "The object of this book is not to give actual designs for hospitals, but to suggest the principles which should govern their design. These principles are not new, but lie scattered through various publications, and the object of this treatise is to bring them together." How effectively he has done so, the medical man, the architect, and all those interested, not only in hospitals but in healthy buildings of any kind, who read his book, will acknowledge.

Matthews' Medical Quarterly: a Journal devoted to Diseases of the Rectum and Gastro-intestinal Disease. Vol. I., No. 1. Louisville, Kentucky: 1894.

This is, so far as we know, a new departure in surgical specialism, being the first journal specially devoted to the ailments of that limited and lucrative region the rectum and anus. How far up the intestinal tract the happy specialist may go is not quite clear; for "gastro-intestinal" gives a wide field, and even the administration of the time-honoured and toothsome Gregory's powder may be included in his sphere of usefulness. One paper among the original articles shows how wide a scope may possibly be granted; it is entitled "Pathological Conditions of the Larynx occurring as Symptoms of Gastro-intestinal Disorders." Our laryngeal specialists may take a hint from this, and treat diseases of the rectum and anus occurring in the progress of tubercular disease of larynx with perfect justice.

Several of the original articles are valuable and well written, but the opinions are most variable and contradictory. Let a young practitioner read the two papers on Appendicitis by Drs Robinson and Morris, and then try to decide when doctors disagree.

The whole magazine, however, is readable and valuable, showing, as it does, how much bold, excellent, and original work is being done in America in this department of surgery. A young surgeon had much better go to America to learn practical work than potter about some small Continental school where the language takes up most of his time.

The Northumberland and Durham Medical Journal; being the Journal of the Northumberland and Durham Medical Society. Edited by J. LIMONT and RUTHERFORD MORISON. Published Quarterly. January 1894.

THIS excellent periodical is issued free to the members of the Society, and can be procured by others at 6s. per annum. Judging from the present number, purchasers will get good value for their money; for the papers are both short and practical, indicating that much excellent work, both in Surgery and Medicine, is being done in Newcastle. The surgery especially is both bold and successful. The papers are delightful in their brevity,—not mere text-book compilations. Galen and Hippocrates are conspicuous by their absence; and judging from the reports of the Society's proceedings, no member either wishes or is allowed to take more than ten minutes to his speech or communication. Practical communications which take more than ten minutes to communicate are generally not worth much.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING IV.

Wednesday, 17th January 1894.—Dr CLOUSTON, *President, in the Chair.*

I. ELECTION OF MEMBERS.

The following gentlemen were elected Ordinary Members of the Society:—William Simmers, M.B., C.M., Denburn, Crail, Fife; Charles A. Sturrock, M.B., F.R.C.S.E., 15 Regent Terrace, Edinburgh; James Mackenzie, M.D., 66 Bank Parade, Burnley; F. Maurice Graham, L.R.C.P. & S.E., Cowgate Dispensary, Edinburgh.

II. EXHIBITION OF PATIENTS.

1. *Dr Byrom Bramwell* showed—(*a.*) Two cases of LUPUS and a case of PSORIASIS, under treatment with thyroid extract, which had been shown at the last meeting of the Society; (*b.*) A remarkable case of ICHTHYOSIS, and Drawings of a second case.

2. *Dr W. Stewart* showed a case of COMPOUND SUBASTRAGALOID DISLOCATION OF THE FOOT,—T. W., æt. 24, seaman, who at 5 o'clock on the morning of the 18th November 1893 had dropped 25 feet into the hold of a ship in the Roads, landing with the weight of the body on the left foot. On his admission to the Leith Hospital, about 10 o'clock, the left astragalus was found dislocated downwards, inwards, and forwards, and protruding through a wound about 3 inches long, the foot being extremely everted. The anterior and posterior facets in the inferior surface of the astragalus were exposed, the interosseous ligament completely torn through, and the anterior part of the astragalus was fissured longitudinally. The posterior tibial vessels were lying for the space of over an inch quite free from any surrounding tissue, so that the finger could be easily hooked round them. They were, however, uninjured. On examination under chloroform the tibio-fibular astragaloid joint was found to be intact; but a piece of the os calcis, measuring about 1 inch by ½ inch in breadth and depth, was found lying loose. The original wound was extended downwards, and a counter opening made on the outer aspect of the foot. The loose piece of os calcis was removed, and on extension being applied to the metatarsus the parts were comparatively easily put into position. After washing out the joint with 1-2000 corrosive solution, a drainage-tube was introduced into the opening on the outer side, the wound sutured, and the foot put in a box splint. Owing to pain and swelling of the parts, with a rise of temperature (to 101°) on the third day, a drainage-tube was introduced from the opening on the inner side, passing along the posterior aspect of the os calcis to the outer side of the foot, and the leg swung in a Salter's cradle. After this the patient had no pain, his temperature fell to normal, and on the 25th November (the eighth day after the accident) the wounds were healed, except where the tubes were. At next dressing (fourteenth day) the tubes were removed, and on the 18th December, the parts being soundly healed, passive movements were begun and are still continued. To-day (the 17th January) the patient walks well without crutch or stick; and though the parts are still stiff and slightly swollen, the movements are daily improving, with every prospect of a perfect recovery.

3. *Dr W. Allan Jamieson* showed a case of LUPUS ERYTHEMATOSUS resembling the telangiectic variety described by Dr Radcliffe Crocker. The patient was a young woman aged 20, who enjoyed good health herself, and in whose family there was no ascertainable history of tubercle. The disease began on the left cheek when she was seven or eight years old. Since then it has gradually extended. Three years ago she was treated with Koch's tuberculin in Dundee Infirmary. This made the face flush at times, but did no good to the eruption. The disease affects the face and scalp alone. The face is symmetrically attacked, and in two forms. One consists of a linear erythematous band, two lines wide, well defined, of a pink colour, and slightly scaly. This is seen on the chin, forming a band convex superiorly, and on the upper lip as two vertical bands between the nose and lip. These are serpiginous, and leave behind a smooth, pliant, white cicatrix. On the cheeks there is much cicatricial tissue, interspersed within which are pink macules, somewhat raised, many of which are made up of, or contain, dilated arterioles. To the finger passed over it the cheek presents a nodular feel. There is not much tendency to scaliness; some hard splintery scales, however, have formed on the bridge of the nose. The sole subjective sensation is occasional slight itchiness. There are several patches on the scalp, bald, rather reddened areas, which at times bear a firmly adherent crust. The ears are not affected. Some improvement has, even in the few days since her admission to the Skin Wards of the Royal Infirmary, taken place, though the only treatment instituted so far has been the administration of ichthyol in five-minim doses twice a day, and the application of a pretty strong resorcin paste to the scalp. It is proposed to try electrolysis to the macules on the cheek. Crocker[1] describes the appearances "as presenting no marked change of the surface, except a persistent circumscribed redness, seen on close inspection to be due to dilated vessels. This is commonly symmetrical, is not very noticeable to the eye, but on pinching up the tissues there is marked thickening."

III. EXHIBITION OF PHOTOGRAPHS.

Dr John Thomson showed PHOTOGRAPHS of a case of Cretinism formerly shown to the Society, and gave an abstract of the notes of the case, which appear at page 720 of this Journal.

IV. EXHIBITION OF SPECIMENS.

1. *Dr Herbert Littlejohn* showed SPECIMENS from two cases of suicide—(*a.*) A PHOTOGRAPH of the HEAD, and the REVOLVER from a case of suicidal pistol wound of the head. The *photograph* showed position and character of the wound. The *pistol* showed *cartridges* attached, four of which bore the mark of the hammer, indicating

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Diseases of the Skin, second edition, 18 3, p. 492.

that the trigger had been pulled four times, the last of which had taken effect. Deceased, who was a native of America, and aged 49, had been in depressed spirits for some months, apparently the result of overwork. He used to say that he had done a great deal of evil, and was not fit to live. He had attempted his life on a previous occasion by stabbing himself in the chest, and attempting to sever his femoral artery with a penknife. On the 4th August 1893 he was found lying on the floor of the water-closet in connexion with the apartments he occupied, in an unconscious state, and blood flowing from a wound on the right side of his head. He gradually sank, and died about one and a half hours after,—the immediate cause of death being asphyxia from blood passing down into the air-passages. At the post-mortem a wound about the size of a sixpence was found situated immediately in front of the pinna of the ear where it joins the scalp. It presented the usual appearances of a wound of entrance. There was no exit wound. On reflecting the scalp, both temporal muscles were seen to be infiltrated with blood. On removing the calvarium and examining the brain, the track of the bullet was easily seen passing transversely through the hemispheres and admitting the finger. At a point on the opposite side exactly corresponding to the wound, and lying immediately under the surface of the brain, the bullet, flattened and distorted, was found. The arachnoid presented the appearance of opacity so often seen in cases of insanity. Various fractures were noticed. The main ones passed backwards into the occipital regions, forward through both orbital plates, and one passed transversely through the base, reaching as far as the temporal region on the left side. This latter fully accounted for the infiltration of the left temporal muscle, and for the blood passing into the air-passages.

(*b.*) The CALVARIUM of a young woman, showing injuries self-inflicted with a hatchet, which was also produced. Deceased was a domestic servant, and aged 23 years. About a fortnight prior to death deceased had suffered from influenza, after which she is stated to have been peculiar. On the morning of December 25th, 1893, her mistress told her she might have the forenoon as a holiday. The family went out, and she was left in the house with a fellow-servant, who, not seeing her, supposed she had gone out. About 2 o'clock her mistress returned, and her services being required she was sent for, but could not be found. The house was searched, and the bath-room door was found locked. This was forced, and in the bath, which was almost full of water, the girl was found lying on her side with her face covered by the water. In the room were found the hatchet and a bottle labelled laudanum. This bottle, which belonged to the master of the house, was known to contain about 1 oz. of laudanum. On post-mortem examination, extending from the roots of the hair in front, backwards for about 3½ inches, was a lacerated wound of about 1½ inch in breadth. The bone at the base of the wound was denuded of periosteum, and presented several longitudinal fractures, which apparently only involved the outer table of the skull. The usual post-mortem appearances of drowning were present, and the stomach contained what was evidently a dilute solution of laudanum (diluted by the water of the bath).

2. *Dr Alexander Bruce* showed a CHOLESTEATOMA.

V. ORIGINAL COMMUNICATIONS.

Dr James Mackenzie, Burnley, read a paper on THE SIGNIFICANCE OF PULSATIONS IN THE VEINS AND IN THE LIVER.

Dr G. A. Gibson said that there could be but one opinion among the members of the Society as to the extreme value of Dr Mackenzie's paper. By the results which he had placed before them, the views of Friedreich upon the venous pulse, which had so long held the field, appeared to have received their quietus. For his own part, his views regarding the venous pulse had been dominated by the teaching of Friedreich, and, although he had read most of the works on the subject which had preceded Dr Mackenzie's, he could not claim any opinions of his own. The observations of François-Franck had thrown considerable light upon the venous pulse. One of his most interesting observations was that by merely causing asphyxia in certain animals, and by making persons hold their breath, a venous pulse was produced such as was seen in tricuspid incompetence. The explanation was simply that with a very slight excess of pressure in the right ventricle a communication was established through the tricuspid valve into the auricle. He agreed with Dr Mackenzie's explanation of how the waves of the venous pulse occupied the relative positions they were found to have, but was inclined to ask Dr Mackenzie to explain more fully that part of the error which he had called the arterial, and which was so far in advance of the regurgitant ventricular impulse. The most valuable part of the paper was probably that in which he explained certain phenomena which were first described by Leyden of Berlin, and afterwards more fully by Roy, and interpreted by them as indicating that there might be, under certain conditions, contraction of one ventricle without contraction of the other. Dr Mackenzie's explanation that in such cases there was simply a contraction of the right auricle was perfectly rational, and probably correct. It was confirmed by what could be observed when watching the heart of any animal dying, namely, that the right auricle might go on beating after the rest of the heart had stopped. Dr Gibson then handed round a venous pulse-tracing of a kind which, he said, as far as he knew, had not been shown before. It was obtained from the back of the hand of a case of aortic incompetence and pneumonia, with consequently very low arterial pressure. The pulsation was produced by direct pressure from the arteries passing through the capillaries.

Dr Byrom Bramwell said he was much struck with the extreme ingenuity Dr Mackenzie had brought to bear on this subject, especially in devising a satisfactory method of timing and recording these various phenomena on the same paper, without which it would have been impossible for him to reason them out, and to form the conclusions about them that he had come to. He hoped that Dr Mackenzie would not be content with the work he had done, but that he would continue it and apply his experience and great mechanical skill to the devising of some instrument which would enable them more satisfactorily and readily to record the working of the apex-beat than they were at present able to do. This work of his would, he believed, enable him to differentiate and separate many of the obscure phenomena connected with cardiographic tracings, which it was extremely difficult for others to do who had not had the same special experience. He had set before them facts, and his interpretation of them, it seemed to him, was admirably lucid and convincing. Like everybody else, for years past he (Dr Bramwell) had been struck with the fact that in certain cases one got a slight flickering pulse in the neck, the interpretation of which had been very difficult, especially as in many of them there was no auscultatory evidence of tricuspid regurgitation. He had found it often exceedingly difficult to time the exact rhythm of the pulsation. Dr Mackenzie, by showing that one part of the venous pulse was at times auricular and at others ventricular, explained much of the difficulty they had hitherto experienced in dealing with these cases. Many of his other tracings were also of extreme value. They showed, in a way that it had been impossible to demonstrate before, the exact relationship of the ventricular and auricular contractions in cases of mitral stenosis in which there was an apparent discrepancy between the heart's action and the pulse.

Dr Graham Brown remarked that he thought he saw in Dr Mackenzie's work a prospect of arriving at a means of determining the condition of the walls of the heart, which they had as yet almost no means of doing. If this was so, he could imagine no more important contribution to medicine than the paper which had been read.

Dr Noël Paton said that Dr Mackenzie's paper was a clear indication of what the physician could do for physiology. No point had interested him more than the record in the human heart of an auricular systole in the absence of the ventricular, which investigation in animals had shown to occur under certain conditions. He did not agree with Dr Mackenzie in his interpretation of his so-called ventricular wave, but regarded it as simply due to stasis. He asked Dr Mackenzie to tell them something more about the interpretation of the "arterial" wave of the venous pulse.

Dr James Mackenzie, in replying, said the arterial wave was not a venous wave at all, but was due to the impulse from the carotid artery, with the pulsation of which it was always synchronous. It was never seen in the liver pulse, nor when there was a very small arterial pulse, nor when, as was represented in one of the diagrams, there was no carotid pulse. The explanation of why the ventricular wave was so long in appearing was that the dilated auricle had to be refilled by the reflux of blood before the wave appeared in the veins. If the tricuspid was largely incompetent the auricle filled very early and the wave appeared sooner. If the rise were due to a mere stasis, as had been suggested, the line of curve would have been a gradual ascent, but it was steep. This was one of the strongest arguments in favour of there being an active agency producing it. He believed that the irregularities in the ventricular contraction to which he had alluded were not due to stimulation of the vagus, which it had been proved produced first an irregularity of the auricular contractions. The auricles had acted regularly. With regard to slight flickering of the venous pulse to which Dr Bramwell had referred, he had obtained tracings from such cases, in which it appeared as dancing vibrations. They could be exactly timed by his method, although to the eye they were so slight as to give rise to only flickering movements.

The President conveyed the hearty thanks of the Society to Dr Mackenzie for his paper.

2. *Dr Byrom Bramwell* read a paper on A CASE OF CANCER OF THE SPLEEN AND OTHER ORGANS.

Dr Leith communicated the MICROSCOPIC REPORT of the case, and showed SPECIMENS.

Dr Stiles said he had examined the patient's mammæ with Dr Bramwell last February, when the disease was not far advanced, and he had come to the conclusion that the condition was one of carcinoma. The case was certainly peculiar. He had not seen a similar one before. There were multiple nodules throughout both mammæ. When one met with a condition like this, especially in an unmarried woman, one thought of chronic lobular mastitis with small cysts rather than cancer. But there were beaded chains radiating in all directions from the mammæ, and in the axillæ there were very hard glands. He had removed one of the nodules, and found it to show the structure of carcinoma, but the cells were smaller than usual. He had also examined the mammæ after death, and prepared naked-eye specimens by the nitric acid method, which showed the nodules, and also a fibroma. This probably was the tumour which was felt some years before. The large number of nodules in the mammæ were to be explained in one of two ways. Either one of them was primary and the others had arisen from it by dissemination, or it was a case in which the tumours were multiple from the first. The nodules in the front of the abdomen and in the back were to be explained by the opening up of their lymphatics when the usual lymphatic channels from the mammæ became obstructed. He thought that the tumours in the internal organs could only be accounted for by a blood distribution.

Dr Alexander Bruce said he would like to express his astonishment at the condition of the spleen. It was certainly, as Dr Bramwell had said, an exceedingly rare thing to see cancer of the spleen at all. When it did occur it was usually an infiltration from the neighbouring organs, from the stomach towards the hilum. This was an almost perfectly unique case. He had never seen anything like it, and there was nothing in the ordinary text-books about it. The infection of the liver and spleen was more likely to be embolic than lymphatic in its spread. It was certainly possible that the dura mater of the spinal cord and brain might be involved from the lymphatic side as well as from the vascular. The infection might have run along the lymphatics of the intercostal nerves, and have entered into the spinal canal through the intervertebral foramina. Then the cancer cells might have passed up through the lymphatics of the dura mater. There was little doubt that tubercular meningitis frequently arose in a similar way from a focus of infection about the spine. With regard to the absence of pigmentation of the skin in this case, it was his experience that Addison's disease was never produced by tumours of the suprarenal capsules, but only by tubercular degeneration of them.

Dr William Russell said, as the condition of the spleen had aroused interest, he might say that he had had one case of diffuse cancer in that organ, and in which there were, so far as he could remember, multiple skin cancers. He agreed with the remarks of Dr Bruce regarding the points to which he had referred. Tubercular meningitis, in his experience, was commonly associated with tubercular eruption in the membranes of the cord, and the presence of a primary caseous focus in the thorax or abdomen in some of these cases had been observed, the infection spreading first to the spinal meninges. There was no doubt that it was true that even entire destruction of the suprarenal capsules by malignant disease was not associated with any discoloration of the skin.

Dr Byrom Bramwell, in replying, said that his reference to Addison's disease had perhaps given rise to some misunderstanding. His experience on the point entirely corroborated that of Dr Russell and Dr Bruce. In this case, however, there had been dense infiltration around the suprarenal capsules, which might have compressed the nerves, which it was probable were affected in tubercular disease of the suprarenals. With regard to tubercular processes in the membranes of the brain and spinal cord, he thought that the condition in the cord when it occurred was usually trifling in comparison with that in the brain. He did not think that tubercular meningitis was usually an extension from a spinal meningitis. Dr Stiles' suggestion that in this case the cancerous cells got into the blood and produced embolic infections in the various organs, was almost certainly true. It was, however, difficult to understand how the cancer cells got into the blood, and how they could pass through the lung without producing tumours there. He had seen innumerable small abscesses in the lung resulting from an abscess in connexion with the liver, and he did not know that the infective particles in the case of an abscess were more likely to stick in the lung than those in the case of cancer.

Dr Alexander Bruce remarked that melanotic sarcomas beginning in the orbit frequently occurred secondarily in the liver without occurring in the lung. In such a case the cells must have been passed through the lung. Probably the reason that the lung was not involved was that the pulmonary capillaries were very large, and therefore enabled cells which stuck in other capillaries to pass through them. In head injuries with a septic consequence there was very frequently abscess in the liver, though the lung escaped.

Dr Leith explained that in his pathological report he had not meant to convey the impression that he believed that in this case the spread of the infection was by means of the lymphatics. He merely meant to dwell on the curious condition that in the internal organs there were lymphatic injections. His explanation was the same as that of Dr Stiles. He agreed with Dr Bruce regarding the great likelihood of cancer cells passing through the lungs without lodging there.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING III.

Wednesday, 10th January 1894.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. *Dr Webster* showed a specimen of an ABORTION SAC which was passed by a woman on November 13th, 1893. Three weeks previously the abortion was threatened, and there was a daily dribbling of blood from the vagina until the sac was passed. She was not under treatment during this period. Her menstrual history gave no indication as to the length of the pregnancy, conception having occurred during a period of amenorrhœa due to anæmia. The abortion sac presented one or two points of interest. Immediately after being passed it was thought to be a complete abortion. It was about the size of a large hen's egg, the outer surface being of a pinkish-yellow colour. In the main, the surface was smooth, though here and there it presented a finely shaggy appearance. This surface at first sight was thought to be the surface of the vera separated from the uterus. On opening the sac a smooth cavity was found, and projecting from the wall a large rounded dark mass the size of a walnut, which, at first sight, appeared to be the reflexa. In the substance of the rest of the decidua several small hæmorrhages were seen, varying from the size of a pea to that of a bean. Lying in the large cavity was a small fœtus about half an inch in length, the umbilical cord passing into the supposed reflexal sac. The fœtus was well formed, and showed the commencing buds of the limbs. The first idea formed of the case was that there had been a hæmorrhage inside the reflexa, and that the fœtus had been forced through the wall into the space between the vera and reflexa. Microscopic examination, however, showed the following points:—The outer surface of the abortion was not vera, but the reflexa. It had apparently formed a few adhesions with the vera. The inner surface of the sac was entirely lined with amnion. The large round sac thought to be the reflexa was in reality a large hæmorrhage which had occurred under the amnion, and had pushed it forwards. It is interesting to note the difference between the size of the fœtus and that of the abortion sac. The latter is the size normally found in a two or two and a half month's pregnancy; the former is only three or four weeks old. Usually such an amount of hæmorrhage in the decidua is accompanied with the death and abortion of such a young fœtus, if the abortion be delayed for two or three weeks. Here, however, the fœtus is well formed and well preserved. It may be that it was not destroyed, but lived, though feebly, until the abortion occurred. This is difficult to believe, because the large hæmorrhage occurred immediately under the attachment of the umbilical cord. It may be that it was killed, but remained intact; this is doubtful, because it showed not the slightest sign of softening. Another possibility is that the fœtus was an abnormally small one; or it may be that the case was one of early hydramnios, the disproportionate size of the amniotic cavity relative to that of the fœtus being thus accounted for. The specimen is also of interest as showing how a reflexal abortion may be mistaken for a complete abortion. In this case the vera was left behind in the uterus, and required to be removed with the curette.

II. *Dr Hart* showed Photographs of an ACHONDROPLASIAC DWARF for *Dr Hermann*, London.

III. *Dr J. W. Ballantyne* exhibited—(*a.*) A FŒTUS WITH GENERAL DROPSY, which Dr J. Halliday Croom had kindly given him. It was the sixth specimen of the disease which he had been able to examine. It was a female, and had the usual external appearance of general dropsy as it occurs in the fœtus. In the dissection of it he was aided by Dr Samuel Davidson, Demonstrator of Anatomy at Minto House. A careful search was made for the thoracic duct in its usual position, but no trace of it was found. The only other anomaly was a less patent condition of the foramen ovale than is usually met with at this time of fœtal life.

(*b*.) A FŒTUS WITH IMPERFORATE ANUS, which was brought to him on December 16th, 1893, by one of his Dispensary students (Mr Briggs). The mother was nearly 40 years of age, and was a xiv.-para. She first menstruated at the age of 13, and was married when 17. Of her fourteen pregnancies, the second, fourth, and fourteenth (the present one) had ended in miscarriage; the sixth child was born at the seventh month, but is now alive; the others went to the full time, but three of the children died in childhood. Both her father's mother and her mother's mother had families of thirteen children, and her mother had had eight infants. There was no history of twins. In this (her fourteenth) pregnancy, labour set in at five and a half months; the waters began to dribble away about a week previously, the child presented by the breech, and there was some delay in the expulsion of the placenta. The only cause assigned for the miscarriage was the occurrence of a "heavy washing" about a week before. The fœtus, a male, weighed 715 grms. The placenta, membranes, and cord weighed 210 grms.; the placenta was pale, and its uterine surface was much broken up; the membranes appeared normal; the cord was 40·5 cms. in length, had an almost central insertion, contained two arteries and a vein, and showed little torsion. The placenta measured 13 cms. by 11·5 cms., and was 1·5 cm. in thickness. Dissection showed that the internal organs of the fœtus had a normal appearance; but it was noted that whilst the greater part of the large intestine was somewhat contracted, the sigmoid flexure and rectum were greatly distended with meconium. The left side of the pelvis was then removed in order to expose the lower end of the rectum. The left testicle was found lying at the internal inguinal ring, and the right a little above it. The rectum passed down into the pelvis lying behind the bladder; it terminated blindly at a distance of 1 cm. from the perineum, and at its termination was in close contact with the posterior surface of the urethra at its point of origin from the bladder. Externally there was a marked post-anal dimple. There was no anal aperture, but in the raphe of the perineum, which was well marked, was a small whitish projection in the usual situation of the anus. The penis was curved sharply on itself. The hands and feet were normal.

(*c*.) AN EXENCEPHALIC FŒTUS, which had been handed to him for examination by Dr Arthur Wilson. The mother was a well-developed woman, 29 years of age, living in comfortable circumstances. She had always been healthy, and was married when she was 28 years and 9 months old. The uterus and annexa were normal, and her menstrual functions regular. The deformed fœtus was the result of her first pregnancy. During the gestation she had frequency of micturition, and in the last week she suffered from great thirst (drinking as much as eight pints of water daily).

The fœtal movements were felt strongly the week before delivery, and during this same week the patient got very rapidly bigger (as large as if at ninth month). Uterine pains began on Friday, December 22nd, lasted for six hours, returned again on Sunday, and persisted till the child was born on Monday (Christmas day) at 11 A.M. The patient had been anæsthetised, and the os dilated with the hand. The head presented. The child's heart was beating at the time of delivery, but it did not attempt to respire. The mother made an uninterrupted recovery. The father was a strong healthy man, 33 years of age. There was no family history of deformity on either the father's or the mother's side. The fœtus, a female, weighed 1260 grammes, and had a total length of 35 cms. As seen from the front, it had the usual appearances of anencephaly; but on looking at the head from above it was found that the cranial vault covered by the scalp was present. The vault-bones, however, were evidently lying in close apposition to the basis cranii, a fact that was rendered very clear when a vertical mesial frozen section had been made. From the lower occipital region there projected the cerebral mass, measuring 16 cms. in circumference, consisting of the two halves of the cerebrum, and lying upon the nape of the neck. The frozen section showed that there was cervical spina bifida, and marked lordosis of the cervical part of the spine, along with the usual displacement of the parts in the neck which is found in anencephaly. The ears had the usual crumpled appearance; but the hands and feet were normal. The placenta was kidney-shaped (about 10 inches long), and the cord was inserted near one end, but was not marginal. The membranes were reflected off the fœtal surface of the placenta, about 2 inches from one end. There were at least five quarts of liquor amnii (hydramnios).

(*d.*) A PSEUDENCEPHALIC FŒTUS, which had occurred in the practice of Dr A. T. Sloan, to whom he was indebted for the specimen. The mother was 28 years old, a i.-para, had advanced to about the sixth month of pregnancy when uterine contractions set in (cause unknown), and three days afterwards (December 30th, 1893) the malformed fœtus was born before Dr Sloan arrived at the house. There was no hydramnios, and the placenta and cord appeared normal. The mother had scarlet fever in childhood, which was doubtless the cause of the mitral stenosis from which she now suffered, but she had not had any symptoms of it till two months ago, when hæmoptysis, palpitation, and jaundice developed. She had also incipient phthisis. She was one of a family of seven, of whom six are alive and healthy. The father of the fœtus was a healthy man, and had had four perfectly healthy children by his first wife. There was no family history, on either side, of hydrocephalus, spina bifida, or other malformation. The fœtus, a male, weighed 471 grammes, and had a total length of 26 cms. Its width, with out-stretched arms, was 27 cms.; the circumference round the shoulders was 21 cms., and under the axillæ 19 cms. There was no cranial vault, but on the basis cranii there lay a bilobed reddish mass covered by thin membrane, measuring 7 cms. in breadth, and 16 cms. in circumference. The distance from the perineum to the top of the cerebral tumour was 17·5 cms., and from the same point to the upper border of the supra-orbital margin, where the osseous deficiency began, was 15 cms. There was cervical spina bifida, and the cervical part of the spine showed, as seen in frozen section, marked lordosis. There was the same absence of external indications of a neck, the same contorted appearance of the ears, and the same displacement of the organs in the cervical regions as is met with in the anencephalic fœtus. The age of the fœtus was evidently between five and six months, and the skin had the reddish hue peculiar to early intra-uterine life. The anatomy was studied by means of frozen sections (vertical mesial).

(*c*.) An ABORTION SAC containing an embryo showing arrested development. The specimen had been kindly given to him by Dr J. M. Farquharson, in whose practice it had occurred. It came from a woman of 26, a vi.-para, who had last menstruated at the end of October. She had threatenings of an abortion on the 27th and 28th of December 1893, and on the night of the 29th the ovum was expelled. No medical man was present at the time of its expulsion. There was some slight hæmorrhage. The woman had been married when 18 years old, and had been six times pregnant. She had not previously had an abortion, but had in one instance given birth prematurely (at the seventh month) to an infant that only lived twenty minutes. She had lost two of her children in June (1893) from scarlet fever; the other two were living and healthy. Her mother had had a family of twelve. The father was healthy. No cause for the abortion was known, save possibly a strain whilst washing, about a week previously. The abortion sac had an ovoid figure, and measured 7 cms. in length by 5 cms. in breadth. It was covered by the decidual membranes, except at the narrow end where the chorion was exposed; at the opposite (the broad end) was a recent hæmorrhage. The sac, when opened, was found to contain 6 drachms of clear liquor amnii, and at a point about midway between the broad and narrow end was seen a small embryo and umbilical vesicle. The embryo measured only 4 mms. in length, whilst from the size of the abortion sac and the history of the pregnancy it ought to have been at least 4 or 5 cms. in length. The umbilical vesicle was pear-shaped, with the narrow end near to the embryo, was flattened, and had a diameter of about 4·5 mms. Dr Ballantyne proposed at a future meeting of the Society to show enlarged photographs of the embryo and umbilical vesicle. A black spot near one end probably indicated the optic vesicle, and there were no traces of limbs. All these (five) specimens had been examined in the Laboratory of the Royal College of Physicians.

IV. Postponed discussion on INFLUENZA IN ITS RELATION TO OBSTETRICAL, GYNÆCOLOGICAL, AND PEDIATRIC CASES.

The President said that he had read with great interest Dr Ballantyne's paper, and hoped that it would have the result of drawing out the experience of Fellows with regard to the points raised in the paper. Personally he had not seen a sufficient number of cases of influenza to express any opinion as to its effect on menstruation and pregnancy. The most noteworthy facts which Dr Ballantyne and others had brought forward were the tendency to bleeding from the uterus during the commencement of influenza and to abortion. But in judging the significance of these, we should also require to know in how many cases influenza occurred without any disturbance of menstruation or pregnancy. It might come out in discussion that there were so many cases in which influenza had no effect, that it was doubtful whether in the cases where these symptoms occurred we were justified in attributing them to influenza.

Professor Simpson said he had suggested that discussion of Dr Ballantyne's paper should be deferred, in the hope that after the Fellows had had time to think over the matter, some of them might be able to supplement the observations that Dr Ballantyne had brought before them. It was somewhat disappointing to see how little had come of the opportunities the profession had had during the past four years of studying influenza. With all the modern means of investigation it might have been expected that more insight would have been gained as to the nature and effects of this disease than has yet been arrived at. When the epidemic appeared four years ago, he (Prof. Simpson) had watched the patients in the Maternity with the view of noting whether any of them showed any trace of the affection; but the Institution remained perfectly free from any disturbances that could be referred to the disease. He had seen one patient in private attacked with influenza at the full term, in whom the labour was attended with a dangerous flooding. This disposed him to believe that Dr Ballantyne had been correct in attributing to influenza a tendency to increase uterine hæmorrhages. In any case, the paper was valuable as recording the impressions of a careful observer, and would be of great service in fixing attention on a subject of great importance.

Dr James Ritchie said that he believed that the influenza poison acted primarily through the nervous system, and that among other effects it produced congestions, sometimes very severe congestions, of internal organs—the larynx, bronchial tubes, gastro-intestinal tract, membranes of the brain; in connexion with all these he had seen hæmorrhages because of influenza. In relation to the special department of the Society, not many cases had come under his observation, although he had treated a very large number of cases of influenza. One lady at the climacteric who had a large flabby uterus, and who previously had occasionally somewhat copious losses at the menstrual periods, who also had some months before a slight cerebral apoplexy, was suddenly seized with influenza; she had high temperature, rapid pulse, great congestion of conjunctivæ, a cerebral hæmorrhage, and very copious and alarming metrorrhagia. The latter was checked by means of the hot douche. Another lady, aged 26, about three weeks after an abortion at the third month, was seized with influenza, accompanied by congestion of abdominal organs, pain, sickness, and diarrhœa; she also complained that the womb felt very large. The discharge had been very scanty from the day following the abortion; it had stopped at the end of a fortnight, then recurred slightly, but three days after the onset of the influenza it became so copious that Dr Ritchie was sent for in the middle of the night; it was partially arrested by a crystal of ammonia iron alum, but the hot douche had much more influence, and stopped the copious loss. In children Dr Ritchie had several times found a scarlatinal rash at the commencement of influenza, also sore throat, but in all the cases which had come under his notice he had been able practically to exclude scarlatina by means of the conjunctival congestion, the catarrh of the respiratory tract, and the absence of the characteristic tongue of scarlatina.

Dr Haultain thought that, considering the manifold different symptoms which influenza manifested independently of pregnancy or other complications, it was very difficult to decide what its influence was on any given condition. From the frequently high temperatures with which it was associated, it would seem to tend to cause abortion, like other fevers; but like malarial conditions the fever was, as a rule, not of a prolonged type, and therefore did not cause premature expulsion by any means so frequently as the zymotic fevers. Doubtless from the internal congestion with which influenza had been shown to be associated, one would suppose it to be a source of abortion from a tendency to hæmorrhage into the decidua. From practical experience, however, he found that, in the first place, pregnant women were not prone to take influenza; and, secondly, its effect on gestation was by no means so marked as one would expect. It looked very like as if pregnancy offered a certain amount of immunity from the disease. His observations were entirely opposed to Dr Felkin's experience as reported to the Society two winters ago. In the puerperium he was much struck by the high temperatures recorded when complicated by influenza; in one case in particular, the temperature on the fourth day went up to 107°·8 F. without any fatal result. He had met with several cases of influenza associated with gynæcological conditions, but from the obscure workings of the uncomplicated disease he could not definitely attribute the special symptoms to it in such a manner as to make the observations of any special value.

Dr Felkin said that he had read Dr Ballantyne's paper introducing the discussion on influenza with much interest, and that as his own paper on "The Influence of Influenza on Women," which he read before the Society in December 1891, had been referred to, he had much pleasure in making a few remarks, although he had not very much to add to that paper. He had not seen very many cases of influenza this last season, although he had had a considerable number in 1892, and his further experience of the disease had only confirmed his previous opinion that it was dengue modified by climate. He would first reply to Dr Ballantyne's queries; and he did not think that Dr Ballantyne was right in thinking that the influenza was not truly menstrual. The two patients he had previously referred to are now menstruating regularly. The patient aged 10 was rather irregular at first, the period occurring every six and eight weeks during the first year, but now occurring normally. The other case, in which the girl was rather over 12, has menstruated regularly ever since. With regard to the case of the woman aged 49, Dr Felkin saw her a week ago, and found that she menstruated for very nearly two years. Apart from this, however, there can be no doubt that metrorrhagia does occur, as Dr Ballantyne mentions, and five other cases which have come under his notice presented the appearances which Dr Ballantyne quotes from Gottschalk and R. Müller; but out of the five cases the ovaries were affected in four. One of these cases was interesting, because of the persistence of the ovarian irritation. The case was briefly as follows:—A lady, aged 31, the mother of three children, had a severe attack of influenza in February 1891. The flow occurred upon the fifth day, with a secondary rise of temperature to 104°·2. Both ovaries were enlarged and exquisitely tender. Within a month the left ovary became normal, but the right retained a large size, and for more than a year and a half this patient suffered from very severe ovarian neuralgia, which Dr Felkin had extreme difficulty in subduing. The periods were accompanied by great discomfort, and on several occasions hot douches were necessitated. In this connexion three cases of orchitis have occurred in Dr Felkin's practice—two in 1892 and one in December 1893—in which pretty smart orchitis has occurred. In the last case, in 1893, it went on to suppuration, probably due to a severe fall which the patient got before he was fully convalescent. The only other point which Dr Felkin wished to refer to was the necessity which existed for care being taken by women who are attacked by influenza either during pregnancy or when suffering from any pelvic disease. He has seen several cases in which the troubles from which the women happened to be suffering were markedly increased by influenza, and he has had two other cases of abortion. One occurred in a healthy primipara at about the third month; the other in the third pregnancy of an otherwise healthy woman, at about the second month. In both cases recovery was very tedious.

Dr Ballantyne said, in closing the discussion, that he had been somewhat surprised to hear, from several of those who had spoken, that influenza had only in rare instances occurred as a complication of their obstetrical and gynæcological cases He was forced, therefore, to conclude that his own experience had been exceptional. He was much interested by what Dr Felkin had said about the continuance of the menstrual flow in the two young girls in whom influenza was said to have initiated the menstrual function prematurely, and he still felt that it was somewhat strange that influenza should have this power. Such an occurrence might possibly throw some light upon the mechanism of menstruation. Dr Haultain's cases were of great interest, and could scarcely be regarded as simple coincidences; the association of influenza with eclampsia gravidarum was, he believed, a novel observation. Dr Ballantyne agreed with Prof. Simpson that the comparative freedom from influenza of the patients in the Maternity Hospital was a noteworthy fact, and one that it was difficult to explain. There were many facts about the disease which were still most obscure.

V. *Dr James Ritchie* then read his paper on NOTES OF A CASE OF PROLAPSE OF THE BLADDER DURING THE LAST MONTH OF PREGNANCY, which appears at page 809 of this Journal.

The President had listened with much interest to Dr Ritchie's paper. Prolapse of the bladder in the late months of pregnancy was so unusual in a primipara that this case was specially interesting. He asked whether the position of the cervix was altered, as indicating whether it was a true prolapse or a cystocele. It was interesting, also, that it had not recurred after the puerperium.

Dr J. W. Ballantyne was much interested by the account Dr Ritchie had given of the factors which lead to prolapse of the bladder. He had not himself seen a case of the kind which had just been described; but he had recently noted troublesome prolapse of the bladder in a patient who had had the uterus removed by abdominal section for fibroid growths. This case illustrated the combined action of two of the factors in the production of prolapse,—pressure from above and diminished support below; for the patient had been wearing a tight abdominal belt, and the operation had weakened the pelvic supports. He had instructed the patient to give up wearing the belt, and had introduced a ring pessary, with the result that she was now able, for the first time for many months, to do her usual work and earn a living.

Dr Ritchie replied.

VI. *Dr J. W. Ballantyne* demonstrated and described THE FŒTUS AMORPHUS MYLACEPHALUS and THE FŒTUS AMORPHUS ANIDEUS.

ROYAL MEDICAL SOCIETY.

Jan. 19.—Dr Hutchison in the Chair.

Dr C. C. Easterbrook gave a communication upon two fatal cases of Scarlatina Maligna recently under his care at the City Hospital. Both patients came from the same house, which had been infected during the last week of December by a third party. The first patient, a boy æt. 2 years, after an illness of a fortnight, died on January 14th of a combined form of S. maligna and S. anginosa. The case was compared with one of true diphtheria in a girl æt. 4, who died forty hours after admission to hospital. The larynx and trachea from the two cases were shown, and presented in each an inflammatory false membrane. The diphtheritic membrane was much thicker and more easily separable than the scarlatinal, and, moreover, showed, besides other bacteria, the Klebs-Löffler bacilli. The second patient, æt. 28, had been delivered of her third child immediately before admission to the Fever Hospital. During the last fortnight of her pregnancy she was exposed to the infection, but did not show symptoms of scarlatina till the day after labour. She showed a brilliant scarlet rash, with high fever, and on the third day of the puerperium developed marked head symptoms. She died on the morning of the fifth day, just as the rash was beginning to fade. The lochia remained sweet throughout, and "septic puerperal fever," in the ordinary sense, was not considered to be present, the patient dying from the virulence of the scarlatina poison. The distinction between these two processes in a puerpera was not clear.

Mr J. P. Stewart moved a vote of thanks, and said that the second case exemplified in a striking way the view, that while pregnant women were no more liable than others to infectious disease, puerperal women were much more liable.

Dr Rainy said that if a surgical wound be present the incubation of scarlatina is considerably shortened.

Dr A. M. Easterbrook was of opinion that the condition of the lochia and the patient's temperature are no guide in the diagnosis of septicæmia.

Dr Murray Leslie referred to the connexion of puerperal fever with scarlatina and diphtheria.

Dr Fred Mackay asked how the method of infection was traced ?

Dr Elder spoke of the differential diagnosis between the diphtheritic and scarlatinal false membranes. He considered that the female patient must have been infected with scarlatina before labour.

Dr Giles briefly spoke of erysipelas producing puerperal fever.

Dr Easterbrook replied.

Dr Crerar gave a communication upon the case of a child, æt. 4

years, who developed a patch of Catarrhal Pneumonia at the right base, which later led to a serous effusion in the right pleural cavity. Three weeks later this effusion became purulent, and after a portion of rib had been excised the pleural cavity was drained. A great quantity of coagulated fibrin required to be removed during the operation. The tube was removed on the fourteenth day after operation. A week later the temperature became 103° Fahr., and respirations 80 per min. There were no definite physical signs for two days. Then there was pneumonic consolidation of the right base, and next day of a similar area of the left lung and extension as high as the third rib posteriorly on the right side. After a typical attack of croupous pneumonia, the crisis occurred on the seventh day. The patient afterwards made a rapid recovery, and is now quite well.

Dr Crerar emphasised the fact that whenever, either in adults or children, pus is known to be in the pleural cavity, a portion of rib should be resected and the cavity drained. This gives the best chance of the lung expanding, and enables masses of pus-soaked fibrin to be easily removed.

Dr Elder congratulated Dr Crerar on the successful termination of the case, and spoke of the difference of physical signs in children and adults.

Dr A. M. Easterbrook thought the empyema was septic, and not tubercular.

Dr Bodon of Buda-Pesth spoke of some new methods of examining micro-organisms. He said that almost any organism can produce pus, and that they could transfer themselves from the lung to the pleura, and *vice versa.*

Dr Leslie said that empyema frequently followed influenza, and suggested that it was so in this case.

Messrs D. H. Jones and J. P. Stewart, Dr Rainy, and the President also spoke, the last named mentioning that though in adults a portion of rib usually requires to be resected, yet in the majority of cases in children a cure can be obtained by aspiration alone.

Dr Crerar replied.

Mr Martine read notes of a case which he believed to be one of Accidental Asphyxia. The dead body of a woman was found one morning in a bed in a small room, the ventilation of which was very defective. A fire had evidently been lighted, but the damper, which was found to move with great ease, had fallen and prevented the smoke escaping by the chimney. The window could not be opened, and the door was shut. There was a very strong smell of smoke in the room. The woman appeared to have been sick, as there was vomited material upon her cheek and neck. On account of the presence of this vomited matter it was at first supposed that the case was one of suicide from poisoning. Post-mortem examination, however, showed typically that the woman had been asphyxiated.

Drs Hamilton and Leslie moved and seconded a vote of thanks.

Mr Montserrat suggested that the woman had committed suicide by intentionally closing all apertures through which foul air could escape, and then lighting a fire.

Drs A. M. Easterbrook, Giles, and M'Carthey, and Messrs Jones and Bowes, asked several questions about the case.

Dr Cuthbert Thompson, who was present at the examination of the room and body, after replying to many of the questions asked, gave it as his opinion that the case was one of accidental asphyxia.

Mr Martine replied.

Dr Macdonald showed a large Multilocular Ovarian Tumour, and mentioned some interesting points in its diagnosis. The patient stated that the tumour, which was as large as a full-term pregnancy, had been present only for one month. There had been four months' amenorrhœa, and patient had been married for one month. She suffered also from marked aortic valvular disease, and the tumour presented very distinct pulsation, no doubt conveyed from the underlying pulsating aorta.

Dr Leslie, in moving a vote of thanks, asked about the diagnosis of ovarian and parovarian tumours?

Dr A. M. Easterbrook thought that though unnoticed by the patient the tumour must have been present for at least four months.

Mr Montserrat and Dr Elder also spoke.

Dr Macdonald replied.

Jan. 26.—Dr Pringle in the Chair.

Dr M'Carthey showed a Patient and read his Case for Diagnosis. The patient, æt. 16, had sustained an injury of his left shoulder and a sprain of the left wrist, owing to falling a distance of 30 feet from a roof. He was unconscious for several hours after the fall. Twenty-four hours afterwards he was seen by a doctor, who put a pad in the left axilla and bandaged the arm to the side. The bandages were kept applied for three weeks, and when they were removed movement at the left shoulder was found to be very limited, and there was an abnormal projection at the upper end. The shoulder was lower than on the right side, and there was some flattening, suggesting atrophy of the deltoid. The scapula projected posteriorly, especially at the lower angle. Circumference of shoulders at the axilla showed the left one to be 1½ inch less than the right. The left upper arm was 1 inch shorter than the right. Flexion of left arm was about half the normal amount. Abduction at shoulder slightly less than normal. External rotation with arm flexed at a right angle was painful, and scarcely possible. The clavicle was normal, and the head of the humerus seemed to be in the normal situation. No callus could be felt, but on the antero-external aspect of the left humerus a projection was felt. Practically all movements at the shoulder could be performed.

Dr Leslie, in moving a vote of thanks, said the patient was a good case of tænia tonsurans.

Dr Guthrie thought there had either been a partial separation and tilting forwards of the great tuberosity, followed by it becoming again adherent to the shaft, or injury near the bicipital groove.

Mr Montserrat said that the patient had scoliosis. He thought that rupture and laceration of the capsular ligament had occurred, followed by contraction.

Mr Bowes considered that the epiphysis had been separated from the shaft, that the external rotators had turned the head of the bone outwards, and then union had occurred in the altered position.

Mr J. P. Stewart, by a process of exclusion, concluded that fracture of one of the tuberosities, probably the lesser, had occurred.

Dr M'Carthey, in his reply, said that he thought a diastasis of the upper end of the humerus had occurred, and that the head of the bone had then rotated slightly inwards, the whole fragment being at the same time tilted, and thus producing shortening.

Dr A. M. Easterbrook read notes of a pronounced case of Albuminuria in a Primipara, with marked general anasarca, but no eclampsia, followed by recovery. He then discussed the relation of albuminuria to eclampsia, and alluded to the various theories regarding the pathology of eclampsia, viz.:—1, Uræmia; 2, ammoniæmia; 3, Traube-Rosenstein's; 4, pressure of the gravid uterus upon the renal vessels; 5, kidney condition and convulsions, the result of a common irritant.

Mr Bowes also read a communication on a case of Acute Parenchymatous Nephritis with Uræmic Convulsions. Before giving the details of the case, he gave a short *résumé* of the pathology of uræmia, grouping the points in answer to the following questions:—1. Under what conditions do uræmic convulsions arise? 2. Which of those substances that accumulate in the blood are capable of producing the symptoms of uræmia? 3. On what tissues do they act to produce those symptoms? 4. In what way do they act on those tissues? He then gave an account of the case. The uræmia set in quite suddenly, but under treatment with croton oil, pilocarpin, and warmth, followed later by large doses of Henry's solution, speedily subsided, and the patient recovered. One of the most interesting points in the case was that on the fourth morning after the convulsions no albumen was found in the urine, and none has been observed since.

Drs Crerar and Leslie moved and seconded a vote of thanks to the two speakers, and referred to the highly satisfactory treatment of the cases.

Dr Easterbrook replied.

Dr T. C. Guthrie read his Dissertation upon Infant Feeding. At first he referred to the importance of the subject; then from the anatomy and physiology of the infant as bearing on feeding he deduced principles to guide us in the form and composition of food. The entire suitability of human milk was pointed out, and how it bore out the principles formerly considered. This was considered as the type food. After saying a little on natural feeding, he passed to the consideration of artificial feeding. Cow's milk and human milk were compared, and how to utilise cow's milk as a substitute for human was described. The composition of other kinds of milk, and the preparation and properties of various infant foods, were fully described.

Dr Macdonald, in moving a vote of thanks, complimented Dr Guthrie on the lucidity and brevity of the dissertation.

Mr Stewart made some reference to the artificial feeding of young lions at the "Zoo."

Drs Giles, Leslie, Crerar, and Rainy, and Messrs Montserrat and Greig also entered into the discussion, chiefly referring to the eminently practical nature of the dissertation.

Dr Guthrie replied, and the dissertation was accepted by the Society.

The President showed and described—(1.) A Naso-Pharyngeal Tumour, removed from a man æt. 22. It had been present for two years, and had caused bulging of the soft palate and flattening of the bridge of the nose. Mr Annandale split the soft palate and removed the tumour with strong-toothed forceps. There was considerable hæmorrhage, which was arrested by plugging, and the patient was discharged cured on the fifteenth day. (2.) A Sarcoma of the Thyroid from a man æt. 62. The tumour, which had a history of eighteen months, involved the right lobe of the thyroid gland. After ligaturing the superior and inferior thyroid arteries, Mr Annandale shelled out the tumour, and divided at the isthmus. Wound healed by first intention. (3.) A Sarcoma of Rib, probably periosteal in nature. It involved the eighth and ninth ribs on the left side of a man æt. 76. History of six months. A horseshoe-shaped incision was made over the tumour, the affected ribs were divided, and the tumour removed. The patient made a good recovery.

Drs Crerar, Guthrie, and Leslie, and Mr Stewart, thanked the President for exhibiting the specimens.

Feb. 2.—Dr Pringle in the Chair.

Dr C. C. Easterbrook exhibited (with Dr Clouston's permission) two cases of General Paralysis of the Insane,—one in the second stage, the other in the third stage. He briefly discussed the disease, referring more particularly to its recent apparent increase amongst women, and amongst persons (usually females) during puberty and adolescence. This increase was, perhaps, not so much real as due to the fact that since the comparatively recent recognition of developmental general paralysis the profession were on the look-out for it. Many of these cases were distinctly syphilitic—historically, clinically, or pathologically; indeed, the present tendency was to establish syphilis as a more definite and more frequent cause of general paralysis than formerly.

Dr Rainy referred to the treatment of congestive attacks in general paralysis.

Dr Giles spoke of the difficulty of certifying general paralytics.

Dr Yeoman spoke of the beneficial effect of asylum life upon early cases, and was of the opinion that the causal relation of syphilis and of sexual excess to the disease was over-estimated.

Dr A. M. Easterbrook referred to the prominence recently given to syphilis as a factor by Dr Drummond of Newcastle.

Mr Benson spoke of cases of general paralysis in which there was a collateral heredity of mental disease.

Dr Easterbrook replied.

Dr Giles read a paper on Pain as an Aid to Diagnosis. Having pointed out the importance of the localization and distribution of pain, he proceeded to describe some of the more common sites of pain when occurring as a symptom of visceral disease.

Mr Taylor, in moving a vote of thanks, asked about the pain present in Pott's curvature of the vertebræ?

Mr Briggs asked if there were any relation of the organ affected to the nerve distribution?

The President instanced a case of psoas abscess which, on account of the pain experienced, was treated as one of sciatica.

Dr A. M. Easterbrook asked for an explanation of the left infra-mammary pain observed in uterine disorders.

Dr Giles replied.

Dr Elder next read his Dissertation on Myxœdema. In the first place he gave a short account of the clinical appearances of myxœdema; then a historical account of the differentiation of myxœdema from other diseases. After giving an account of the experiments of thyroidectomy performed by Schiff on dogs, Horsley on monkeys, and Gley on rabbits, he considered the question of the functions of the thyroid gland. He considered that whatever its exact function,—*i.e.*, whether it secreted something necessary for the nutrition of the tissues, or secreted something which in some way neutralized poisons circulating in the blood—it is certainly a a secretory, not an excretory gland. Lastly, he treated of the prognosis and treatment, especially with reference to thyroid feeding. Under the microscope specimens of thyroid were exhibited showing the different stages of the disease from six cases. These were lent by Professor Greenfield; also several specimens of parathyroid glandules or glandules of Gley, lent by Dr Horne. These parathyroid glandules in some animals occasionally take on the function of the thyroid, and were the cause of the uncertainty as to the necessity for life of the thyroid body.

Mr Briggs moved a vote of thanks.

Dr A. M. Easterbrook highly complimented Dr Elder on the dissertation.

Dr Giles referred to the discharge of mucoid material from wounds in myxœdematous patients.

Dr C. C. Easterbrook referred to the administration of extracts of liver in diabetes, of testis in nervous disease, and described a case he had seen in which the daily administration of half a raw testis (young bullock's) made the patient rapidly lose weight and become nervous, depressed, and emotional.

Dr Yeoman spoke of melancholic patients improving under the administration of brain extract.

Mr Bowes asked some questions about the relation of the thyroid and pituitary bodies.

Dr Elder replied, and the dissertation was accepted by the Society.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

MEETING III.—*Jan.* 24, 1894.—Dr ROBERT POLLOK, *President, in the Chair.*

Drs Lindsay and *Jardine* showed TWO ANENCEPHALOUS FŒTUSES.

Dr Jardine read his Report of the Year's Work at the West End Branch of the Maternity Hospital. At the beginning he remarked that men who held appointments like his should look upon it as a duty to give an account of the work done, and should place the report in such a form that it might be accessible to any medical man. It was a matter of regret that no medical report of the Maternity Hospital had heretofore been issued.

The following cases had been attended,—540 at full time, 25 prematurely, 18 abortions; total, 583.

	Boys.	Girls.		Total.
Children born at full time alive, .	260	276	=	536
„ „ prematurely „ .	12	6	=	18
„ „ at full time dead, .	9	5	=	14
„ „ prematurely „ .	3	4	=	7

Ten cases of twins. Operative cases:—Forceps, 29; version, 6; craniotomy, 1. Abnormal presentations:—Breech, 13; hand and breech, 1; feet, 7; face, 3; cord, 1. There were 2 cases of pseudocyesis; post-partum hæmorrhage occurred three times, the worst being in a case of placenta prævia four hours after delivery. Placentæ and membranes were adherent 14 times. There were 2 cases of puerperal fever. One was infected from a case of erysipelas, the other from a drain which had been opened in the close two hours before she fevered. She was removed to the

Fever Hospital, but died there. The first one also died. These were the only deaths.

There were 3 cases of placenta prævia, 1 central and 2 marginal. He dilated and delivered each by bringing a foot down. All recovered, although one had very severe post-partum hæmorrhage four hours after delivery. Accidental hæmorrhage occurred once at full time, caused by the patient overreaching herself. Two cases of contracted pelves. Did craniotomy in one, and used forceps in the other. In the latter the child was born with a very marked depression of one temple. Three face cases, two delivered with forceps and third by turning. The latter child weighed 10 lbs. The arm was displaced behind the head, and the humerus broke, but it united well. The largest child delivered weighed 12 lbs. He turned it, as mother's abdomen was very pendulous, and head would not engage. It was alive. There were no cases of eclampsia.

In opening the discussion, Prof. Cameron said that it was impossible to separate the placenta all round in placenta prævia. If you cannot reach the edge, burrow through to the inner membrane and turn by the bipolar method, and puncture and draw a foot down as soon as it can be reached. He maintained that any general practitioner should be able to measure a contracted pelvis. Eclampsia was the only thing he was afraid of. Face cases should be rectified, if seen early, by drawing the occiput down and rotating the head and body into another diameter. He believed that some contraction in the lower part of the uterus caused the extension of the head.

Dr Gunn remarked that he thought all institutions should give reports, so that general practitioners might profit by them. He related a case of a primipara who had developed unmistakable scarlet fever on the fourth day. She had been exposed to infection four days before delivery. He thought she died of peritonitis set up by the scarlet fever.

Drs Marshall, Richmond, Grey, Howie, Black, and the President also spoke, and Dr Jardine briefly replied.

Part Fourth.

PERISCOPE.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Erythema Induratum.—This is a complaint to which attention was originally directed by Bazin, under the name of "Indurated

Erythema of Scrofulous Persons," a term of too limited a scope. Notice has again been drawn to it by Dr Colcott Fox, and his admirable description[1] has been supplemented by Mr Hutchinson[2] and by Dr Glasgow Patteson.[3] The more usual lesions begin as deep-seated pea or hazel-nut-sized nodules under the skin, which can be felt but not seen. These are very indolent, though not particularly painful even when handled. They slowly encroach upon the skin to form dusky-red, or violaceous, rounded or oval patches, eventually becoming a nut-sized projection, which is then distinctly visible. This stage attained, they may undergo a partial or complete involution. Or, and this is perhaps the most important point in their history, they may suppurate, necrose, and slough out, leaving circular, deep, and punched-out ulcers, resembling very closely those which succeed the breaking down of a syphilitic gumma. The lower parts of the legs, more particularly the backs and outer parts, are those specially involved, but they may occur on the shins, the dorsum of the fingers, and perhaps the outer aspect of the arms, the ears, and face. The disease is much more common in girls than boys, and while the majority of instances are met with near puberty, it may develop in women and more rarely in men. Many of the sufferers are lymphatic or of the scrofulous type, and nearly all are below the standard of health, with a feeble circulation, and tendency to coldness of the extremities. It is apt to appear in such females as stand much and long at their work, as washer-women. It is commoner, too, in cold weather. From erythema nodosum it is diagnosed by the absence of acute tenderness to pressure and to spontaneous disappearance. From syphilitic gummata the discrimination is often difficult. Iodide has no effect on the nodules,—indeed, owing to its lowering influence, it may favour ulceration. The age at which most examples occur, the multiplicity of the ulcers, localisation on both limbs, and the prolonged course, are aids in coming to a decision. Treatment consists in prolonged rest in bed, the administration of cod-liver oil, and of the syrups of the hypophosphites of iron and lime, careful bandaging, with the application of an ointment containing four or five grains of the bisulphide of mercury to the ounce,—a remedy, according to Mr Hutchinson, almost a specific.

THE DERMAL SPLINT.—Under this somewhat fantastic designation Engman and Unna have given an account of what promises to be a distinct aid in dermatology. Among the mechanical helps of which modern dermatotherapy avails itself, suitably arranged pressure, beneath which the application can be fixed on the skin, takes a first rank. Yet it is not too much to say that, up to the present time, a systematically elaborated plan by means of which a suitable pressure may be exerted on any portion of the skin is awanting. Certain indications must be fulfilled; thus the pressure must be uniform. Such pressure can only be exercised by a hard, and, up to a particular point, an unyielding substance. Another is that the pressure must be continuous, and at the same time must not be readily displaced from its position by the patient himself. If such a splint or pressure-cover can be made which will last for the whole duration of treatment, this tends greatly to reduce the cost. Again, it must be easily removed and replaced. Ordinary glycerine jelly plays an important part in preparation of the dermal splint. A tolerably hard and rapidly drying form is preferable, as,—Gelatinæ, glycerini, āā 15·0; Aquæ, 40·0; Zinci oxidi, 30·0. Usually first a layer of Unna's zinc plaster muslin, cut into small and suitable strips, is carefully applied to the part, as the face. Or in some cases the zinc salve muslin answers better. All gaps in this are filled up by covering them over with small pieces. If there are hairs, these are either to be shaven off or cut very closely, or oiled over. Then over the plaster or salve muslin a thickish layer of the glycerine jelly, previously melted in a water-bath, is painted. On this surface is at once laid a piece of soft pliant muslin, made so large as to extend somewhat beyond the intended margin, and this is pressed firmly into every depression and hollow of the part. Over this again another thick layer of the glycerine jelly is painted. In about ten minutes the jelly has so far dried, that a 10 per cent. solution of chromic acid in water can be painted on. This unites with the jelly and converts it into a substance impermeable to water or fat, imparting to it at the same time a greenish hue which deepens with age. When the mask so fashioned has sufficiently hardened it is to be carefully removed; and if at any point it has become attached, it can be loosened by touching the part where there is adhesion with a piece of cotton wool dipped in benzine. The interior is now to be cleansed from any crusts, scales, or adventitious matters, the inside painted with the jelly, and when this has set, with the solution of chromic acid. The mask is now put in a warmish place to dry. In this way an accurate mould of the part is obtained, which can be used to retain in position any dressing, and which, Unna states, with care may last even a couple of months. In some situations, as the hands, the basis may be cotton gloves, a size or two large; or for the scrotum and inside of the thighs, a pair of bathing drawers may be used. Over these the jelly can be painted, then the chromic acid. In some cases the mould can be split in two, and thus applied in two halves. He says that in no instance has the application proved unpleasant except just at first. It is clear that by this means all involuntary scratching can be prevented, while the skin is itself steadied as by a splint. The envelope can be repaired readily by the addition of some more jelly and chromic acid, and it can be tinted by being painted with oil colour if desired. The article contains full directions for preparing envelopes for all parts of the body.—*Monatshefte für praktische Dermatologie*, 15th November 1893.

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[1] *British Journal of Dermatology*, August and October 1893.

[2] *Archives of Surgery*, July and October 1893, and *Medical Press and Circular*, 18th October 1893.

[3] *British Journal of Dermatology*, November 1893.

ERYTHROMELALGIA.—This is the term applied by Dr Weir Mitchell, who first described it, to a chronic disease in which a part or parts—usually one or more extremities—suffer from pain, flushing, and local fever, made far worse if the parts hang down. There are mild cases which do not progress, and which may come and go. There are others which exhibit all the symptoms to such a degree as to make the disease one of terrible torment. As to the pathology of the complaint, Dr Mitchell inclines to regard it as a condition of diffused, what might be called terminal, neuritis, sure, like all nerve-end maladies or influences, to cause remote reflex effects. In a case related, portions of the musculo cutaneous and internal saphenous nerves were resected with almost immediate relief. A month later the pain was lessened, the arteries did not throb, and he could stand and move without uneasiness. The temperature of the diseased foot was less than that of the unaffected one. The disease has apparently been confused with Raynaud's disease, and a synopsis of the contrasts is appended.

Local Asphyxia (Raynaud).	*Erythromelalgia* (Weir Mitchell).
Sex: Four-fifths females.	In twenty-seven cases, two were women.
Begins with ischemia.	Little or no difference of colour is seen until the foot hangs down in the upright position, when it becomes rose-red.
The affected parts become bloodless and white. In certain cases there is the deep dusky congestion of a cyanosed part, with or without gangrene.	The arteries throb, and the colour becomes dusky-red or violaceous in tint.
Pain may be absent or acute, and comes and goes; has no relation to position. May precede local asphyxia.	Pain always present; worse when the part hangs down or is pressed on. In bad cases more or less at all times.
Unaffected by seasons. In many cases all the symptoms can be brought on by cold.	Worse in summer and from heat. Eased by cold.
Anæsthesia to touch.	Sensation of all kinds preserved.
Analgesia.	Hyperalgesia.
Temperature much lowered and unaltered by posture.	Temperature greatly above normal. Dependency causes in some cases increase of heat; in others, lowering of temperature.
Gangrene, local and limited, symmetrical.	No gangrene; asymmetrical.

—*Philadelphia Medical News*, 19th August 1893.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

Congenital Dilatation of the Urethra.—Dr W. H. Baker details a case in which there was congenital dilatation of the urethra. The patient, a single woman of 24 years of age, had had partial incontinence of urine since her earliest recollection. She was able to hold urine when sitting; but was obliged to wear a napkin constantly. Menstruation normal. Urine normal. The meatus urinarius was situated somewhat posterior to its normal plane, was enlarged, livid, and had its mucous membrane somewhat protruding. There was a double opening in the hymen. The urethro-vaginal septum was very thin. The length of the urethra could not very well be determined, for it was impossible to tell where the urethra ended and the bladder began, there being no sphincteric action at the vesical neck. The vagina was short and small. An operation was performed by which the lower portion of the urethra was lengthened and the meatus diminished in size. For a time there was great improvement, incontinence being relieved; but about six weeks later it was found necessary to perform a second operation, the narrowing of the urethra. Since then she has been free from incontinence.—*New York Journal of Gynæcology and Obstetrics*, October 1893.

Pyosalpinx.—Dr G. Wackerhagen recommends the following method of treatment in cases where the patient has been under constant and early observation, and where there has been little time for extensive adhesions. The vulva, vagina, and surrounding parts are cleansed thoroughly, and irrigated with bichloride solution, 1 in 2000. A rubber or steel applicator, wound with cotton and saturated with pure carbolic acid, is passed into the uterus. A small uterine dilator, which has also been dipped in pure carbolic acid, is then introduced into the cervical canal, and gradual dilatation is commenced, which is continued daily until the uterine catheter can be easily introduced, and irrigation practised after each dilatation. As soon as the catheter can be easily passed, pus begins to flow, and the sac is gradually reduced in size until it disappears. After each application a pledget of absorbent cotton saturated with boro-glycerate of alum is placed against the cervix and allowed to remain until the next morning, when it is removed, and the vagina is irrigated with borosalicylic acid. Dr Wackerhagen reports four cases treated in this way, and with good results. He is not able to explain the reason why the pus begins to flow as soon as thorough cervical dilatation is accomplished, but suggests that possibly the dilatation of the muscular fibres of the cervix may cause a simultaneous relaxation of the tubal attachment of the uterus.—*The Brooklyn Medical Journal*, May 1893.

A TUMOUR OF THE LABIUM MINUS.—Dr Kirchhoff describes a somewhat rare case of tumour of the labium minus in an unmarried girl of 18 years of age. Her menstrual flow, which began when she was 15, had been profuse, and had been accompanied by headache, pain in the back, and occasionally by epistaxis; there had also been an intermenstrual discharge. Six days before consulting Dr Kirchhoff she had strained herself in lifting a heavy weight, and had felt something escape from the vagina. A somewhat condylomatous-like tumour with a rounded pedicle was found protruding from the vulva and reaching down as low as the middle of the thigh. The patient was anæsthetised, and it was then found that the pedicle was attached to the upper half of the left labium minus. The labia majora were normal, the clitoris and its prepuce were markedly œdematous, the hymen showed many deep recent tears, and the vagina was large and had a reddened mucous membrane. The uterus was somewhat small and was normal in position. The tumour was cut off close to the vulva, some vessels were tied, and the linear wound closed. The parts healed well. The tumour, which had evidently arisen in the left labium minus and had developed within the vagina, showed on microscopic examination the appearances of a fibroma with some collections of large sarcomatous-like spindle cells.—*Centralblatt für Gynäkologie*, No. 45, 1893.

UTERINE HÆMORRHAGE IN SCORBUTUS.—Dr Goldberg records a case in which great hæmorrhage from the uterus occurred in the case of a woman whose last menstrual flow had taken place two weeks previously. It was thought that she was aborting, but no trace of an ovum was found, and the uterus was distended with clot, whilst on the legs of the patient were numerous petechiæ and blebs containing blood. It was therefore considered that the case was one of severe uterine hæmorrhage due to scorbutus; the vagina was plugged, the scorbutus was treated in the usual way, and the patient recovered completely. Her next menstrual flow, five weeks later, was quite normal.—*Centralblatt für Gynäkologie*, No. 50, 1893.

THE ECBOLIC ACTION OF SUGAR DURING LABOUR.—Dr L. M. Bossi was led by some experiments of Mosso and Paoletti on the influence of sugar on muscular action to try the effect of its administration in cases of inertia uteri. In ten out of eleven cases he found that sugar in doses of 30 grammes in 250 grammes of water had a distinct ecbolic effect; that its action began in about half an hour after its administration; that the effect lasted long enough to lead to the spontaneous expulsion of the infant;

and that the uterine contractions so induced were always regular, never tetanic.—*Annali di Obstetricia e Ginecologia*, Nov. 1893.

CONTRIBUTION TO THE TREATMENT OF UTERINE FIBROIDS BY TOTAL ABDOMINAL HYSTERECTOMY.—Professor Novaro reports the results of eighteen operations upon uterine fibro-myomata. In all these cases he removed the whole uterus along with the growths by means of laparotomy; he left no part of the cervix uteri *in situ*, and closed the aperture in the vaginal vault at once by sutures. As a rule, he employed no drainage either per vaginam or through the abdominal wound in the hypogastrium. In the eighteen cases there was only one which ended in death, and in that instance it was found at the autopsy that a swab of wool had been left in the peritoneal cavity. The method of performing the operation was that of Martin.—*Il Policlinico*, Nos. 1 and 2, December 1893.

SYMPHYSIOTOMY.—Dr G. Carbonelli records a case in which he performed symphysiotomy and then basiotripsy in a patient with an osteomalacic pelvis. The fœtal heart sounds could not be heard, and the pelvis was greatly deformed (conj. diag. about 7 cms.). First symphysiotomy was performed, leaving intact the triangular ligament, then craniotomy was done with the Naegele-Tibone instrument, and finally the head was crushed and extracted by means of the basiotribe. Dr Carbonelli then gives his reasons for preferring this mode of procedure to Cæsarean section. In this instance the fœtus (full time) was already dead.—*Gazetta Medica di Torino*, No. 38, 1893.

THE APPLICATIONS OF GRAPHICS TO THE FŒTAL HEART SOUNDS.—Dr Hugh Hamilton describes an instrument by means of which the fœtal heart sounds can be recorded in the form of permanent tracings. It consists of a modification of Hürthle's microphone connected with a revolving and recording drum. One cardiophone is placed over the spot where the fœtal heart is best heard, the other over the maternal aorta, and in this way two tracings are obtained on the blackened paper, which can easily be distinguished from each other by the rate of the pulse-waves. The author suggests that the instrument will be found to be of use in diagnosing pregnancy from abdominal tumours in doubtful cases.—*American Journal of Obstetrics*, November 1893.

THE RELATION OF CERTAIN URINARY CONDITIONS TO GYNECOLOGICAL SURGERY.—In a paper on this subject Dr Noble points out that albuminuria is a frequent condition among gynecological patients (10 per cent.), and he relates the history of six such cases. He draws the conclusion that it is very important systematically to examine the urine of gynecological patients, especially of those requiring laparotomy, or *celiotomy*, as many now prefer to call it. He shows that the presence of albumen and tube-casts need not affect the issue of the operation. He believes that serious and prolonged laparotomies involving much handling of the abdominal viscera in women having chronic Bright's disease (especially the small contracted kidney), usually terminate fatally; and he is of opinion that the prognosis is best when the presence of albumen and casts is due to the pressure of an ovarian cyst which can be quickly removed.—*American Journal of Obstetrics,* December 1893.

A CASE OF PROTRACTED GESTATION.—Dr Hayes records a case in which it would seem that pregnancy lasted for at least 366 days. The only doubtful fact in the history was that quickening did not occur till six and a half months after the cessation of the menstruation.—*Ibid.*

THE OMENTUM AND THE RÔLE IT PLAYS IN OPERATIVE WORK UPON THE ABDOMEN.—Dr James F. W. Ross of Toronto, in an interesting and suggestive paper, discusses the comparative anatomy and development of the omentum, its structure, its functions, and its diseases. From a practical point of view the most important suggestion is that the omentum "seems to hasten to prevent the invasion of the general peritoneal cavity by some intra-peritoneal poison. It seems to rapidly glue itself to the leaking pus tube, or the inflamed and leaking appendix, or the irritated and inflamed gall-bladder, and thus to ward off a dangerous invasion of the system. It is like a man-of-war, ready to sail to any port in which there is impending trouble."—*Ibid.*

THE UTERINE SOUND—ITS USE AND ABUSE.—In a short article Dr Rosenwasser lays down some timely and very necessary rules for the use of the uterine sound. He says, "Let none use the sound who have not the necessary experience in bimanual palpation to make an approximate diagnosis in pelvic disease." He enjoins strict asepsis of hands, instruments, and field of examination. The sound is only to be used for necessary information regarding the interior of the uterus not otherwise obtainable, or to induce early abortion, or to assist in replacing a movable uterus in exceptional cases. It is not to be used when irritation or inflammation already present would be increased, or when it would be a carrier of disease products or germs, or when it would be likely to cause injury to agglutinated adjacent organs, or when the information gained would be unessential.—*New York Journal of Gynæcology,* December 1893.

OCCASIONAL SURGICAL PERISCOPE.

By ALEXIS THOMSON, M.D., F.R.C.S.E.

TRUE CONGENITAL UMBILICAL HERNIA (Dr Paul Berger, *Revue de Chirurgie,* October 1893).—The writer confines his observations to that form of umbilical hernia which is met with at birth, and which has no other covering than that derived from the cord. In both cases cited by the author the sac contained the cæcum and terminal portion of the small intestine; they were partly irreducible, because of adhesions between the cæcum and the lining of the sac; both were successfully treated by radical cure,—in one thirty hours, and the other on the fourth day after birth. From observations made at these operations, M. Berger arrives at the following facts:—

1. *With regard to the Coverings of the Hernia.*—Two layers were recognised,—a superficial and a deep one, separated by a thin stratum of Wharton's jelly, which permitted of their easy separation. The superficial layer consisted of the amnion, which covered the entire tumour, and was continuous, on the one hand with the amniotic investment of the cord, and on the other with the skin of the abdominal wall. The deeper layer, or sac proper, in contact with the hernial contents, although continuous with the parietal peritoneum, differed from the latter in several important points: it was structureless, without organisation or apparent vascularity, while the peritoneum was red and vascular. He maintains, therefore, that it differs as much from the peritoneum as the amnion differs from the skin; and regards it as an embryonic membrane quite distinct from the peritoneum (primitive membrane of Rathke?).

2. *With regard to the Contents of the Hernia.*—In both, the irreducible portion of the contents consisted of the cæcum, with its appendix and the ascending colon; the bowel was inserted directly into the hernial sac. There being no meso-cæcum nor meso-colon, their adherent surface corresponded to the layer of Wharton's jelly, from which it had to be separated before it could be reduced. It appeared, therefore, that the cæcum and colon had not been displaced into the hernia, but had primarily developed outside the abdominal cavity (and within the cord), and had not re-entered the abdominal cavity, as they ought to have done. It would appear that the evolution of the omphalo-mesenteric duct and of the vitelline duct have nothing to do with this particular form of umbilical hernia.

3. *Treatment.*—Both cases were submitted to operative cure, with complete success. The operation was complicated, consisting really in a laparotomy, with dissection of the adherent portions of bowel, reducing these and repairing the gap by suture of the abdominal wall in three layers. The results, without operation, derived from published cases, show that very few terminate in cure by Nature, and that the large majority end fatally. M. Berger concludes his paper with a *résumé* of all the recorded cases of congenital umbilical hernia in the new-born infant.

THE RADICAL CURE OF HERNIA (NON-STRANGULATED).—M. Lucas Championnière, in the *Revue de Chirurgie*, October 1893, records a new series of 109 cases, forming a total of 384 cases along with those already published. In the whole series there have been 2 deaths. The last 231 have been completed without a single death, thus showing the almost absolute security of the operation. He has seen only a very small number of recurrences. In the new series of cases the hernia was inguinal in 90, of which 7 were met with in the female. Of the 83 in the male, there were 5 with imperfect descent of the testicle; in 3 of these the testicle was drawn down and fixed, in 1 it necrosed after being so drawn down, in the 5th it was removed at the operation. There were 8 femoral hernias—1 in a child of 5½ years, containing adherent omentum. Of 3 ventral hernias, 2 were below the umbilicus, and followed upon laparotomy for large abdominal tumour; 1 was lateral above the left iliac spine, and resulted from a blow with the shaft of a carriage. In all of these a good result was obtained by separate suture of the different layers of the parieties. The 4 umbilical hernias were all of large size, and did not yield very satisfactory results. The author is of opinion that practitioners should not allow an umbilical hernia to attain any size before submitting it to operation. There were 4 epigastric hernias, all of small size, but causing pain and gastric symptoms. In conclusion, the author holds that it should be a rule that as soon as the first infancy is past, every hernia favourable for operative cure should be submitted to operation, as thereby the patient's general condition is ameliorated, his health improved, and risks in the future avoided.

CYSTITIS MET WITH IN PATIENTS WHO HAVE NEVER HAD AN INSTRUMENT PASSED (M. Emile Reymond, *Annales des Maladies des Organes Génito-Urinaires,* October 1893).—Since it has been recognised that all cases of cystitis are the result of infection, the catheter has been regarded as the only method by which the infection of the bladder takes place. While this method ranks first in importance, it is important to bear in mind that, apart from tuberculosis, cystitis may and does occur in individuals who have never been catheterized, and who have never had either a urethritis or infective disease of the kidney. One not uncommonly meets with cases, usually advanced in life, the subjects of enlargement of the prostate, who have never been catheterized, and who have never had symptoms pointing to infective disease of the kidney; in whom, however, there are symptoms of cystitis, and the urine contains pus and micro-organisms. Where does the infection come from? Whence are the organisms derived? Bacteriological examination of the urine in seventeen cases showed that the bacterium coli commune was present in seven, and that other microbes were present in ten. The latter (cocci and bacilli) were such as are normally met with in the urethra, and it is assumed that they reached the bladder by a simple extension backwards, the conditions which enabled them to lodge and give rise to cystitis being the residual urine in cases of prostatic enlargement. Those in which the bacterium coli commune was found were more acute in their clinical features. Of the three possible routes by which they entered the bladder, the urethra and ureter were regarded as unlikely. It is suggested that they might have passed from the rectum and through the prostate.

Part Fifth.

MEDICAL NEWS.

Royal College of Physicians, Edinburgh.—The following gentleman passed his Final Examination for the degree in Medicine in February 1894, and was admitted L.R.C.P. Ed.:—Duncan M'Alpine, Winnipeg, Manitoba, Canada.

Royal Colleges of Physicians and Surgeons, Edinburgh, and Faculty of Physicians and Surgeons, Glasgow.—The Final Examination for the Triple Qualification took place in January 1894, and out of 115 Candidates the following 61 passed, and were admitted L.R C.P. & S.E. and L.F.P. & S.G.:—Arthur Augustus Pim, Belfast; Harry Bond, Lancashire; Juan Carlos Atkinson, Chili; James Cameron, Scotland; George Watt Anderson, Scotland; William Finlay, Glasgow; Joseph Cheetham, Yorkshire; Clyde Harold van Straubenzee, London; Thomas Messenger, Silloth; Albert Harding Porter, Victoria; Thomas Hopps, Manchester; Edward Henry Thomas, India; Llewelyn Ferrar Conway-Hughes, Guildford; James Johnstone Anderson, Hawick; John Larwill, Lewes; Lewis Tyrer-Jones, Anglesey; Peter Arthur Winckler, India; Walter Fitzpatrick, India; Francis Joseph Flavin, Doncaster; Alfred Edward Joseph Ward, India; John Murly Rendall, Torquay; George Lane, Edinburgh; Thomas William Smyth, County Cork; Gerald Hartnoll de Saram, Ceylon; Umedram Lalbhai Desai, Baroda, India; Mary Frances Sinclair, Perthshire; John Elliot, Dalkeith; George Dixon Backhouse, Preston; Cecil Bayley, Northampton; Annie Florence Mary Cornall, Bristol; William Monds Fox, Cork; John M'Keague, County Fermanagh; William Henry Griffith, Denbighshire; John Hubert Saunders, County Cork; Alfred Frederick Septimus Pearcey, County Durham; Charles Holding, Southampton; Charles Harvey Hinrich Cazalet, Middlesex; Alfred Ernest White, Manchester; Robert Herbert Wilson, India; Hugh Alexander Charles Davidson, Caithness-shire; Dhunjeshaw Hormasji Dantra, Bombay; William Henry Andrews, Devonshire; Timothy Murphy, Cork; Luke Joseph Quigley, King's County; John Scott, Northumberland; John Ellery Lardner Pollard, Lancashire; James Wishart, Leith; Allen Perry Stinson, County Armagh (with honours); Harry Frank Bawa, Ceylon; George Fortescue Jackson, Kingstown; William Rock, Australia; Arthur Harry Collins, Wolverhampton; James Robertson Crease, South Shields; Herbert Miall Woodhead, Huddersfield; Henry Ernest Davis, India; Sydney Booth, Lancashire; John Edmund Foley, County Clare; John Macintosh, Glasgow; Aubrey Johnston, Penang; Arthur Cajetan Baca, Gibraltar; and James Alexander Clark Park, St Andrews. Of 30 Candidates who entered for the respective divisions, 15 passed.

British Medical Service.—List of Surgeons on Probation of the Medical Staff of the British Army who were successful at both the London and Netley Examinations. The Prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly shown in the list which follows:—

January 31*st*, 1894.

No.	Names.	Combined Marks.	No.	Names.	Combined Marks.
1.	Prynne, H. V.,	4736	7.	Cameron, K. M.,	3980
2.	Master, A. E.,	4635	8.	Fleury, C. M.,	3717
3.	Dansey Browning, G.,	4327	9.	Fox, A. E.,	3657
4.	Clark, E. S.,	4073	10.	Green, S. F.,	3628
5.	Barnett, K. B.,	4051	11.	Tibbits, W.,	3485
6.	Boyle, M.,	4015			

Indian Medical Service.—List of Surgeons on Probation in Her Majesty's Indian Medical Service who were successful at both the London and Netley Examinations. The Prizes are awarded for marks gained in the special subjects taught at the Army Medical School. The final positions of these gentlemen are determined by the marks gained in London added to those gained at Netley, and the combined numbers are accordingly in the list which follows :—

January 31*st*, 1894.

No.	Name.	Combined Marks.
*1.	Lamb, G.,	5634
†‡2.	Burden, H.,	5188
3.	Leumann, B. H.,	4802
4.	Fisher, J.,	4578
5.	Peck, E. S.,	4479
6.	Evans, C. H.,	4419
7.	Bennet, H.,	4385
8.	Harris, A.,	4318
9.	Berry, A. E.,	4304
10.	MacLeod, E. C.,	4282
11.	Thomson, C.,	4045
12.	Fraser, H.,	4032

* Gained the Herbert Prize of £20, with the Martin Memorial Gold Medal, the Parkes' Memorial Bronze Medal, the Montefiore second Prize, and a Prize in Pathology presented by Professor A. E. Wright, M.D.

† Gained the Montefiore Medal and Prize of 20 guineas, and the Prize in Clinical Medicine presented by Surgeon-Gen. W. C. Maclean, C.B.

‡ Gained the De Chaumont Prize in Hygiene.

THE BRITISH GYNÆCOLOGICAL SOCIETY.—At the Annual Meeting of this Society held on Thursday, January 11th, 1894, the following Officers and Council were elected :—*Honorary President*, R. Barnes, M.D., F.R.C.P. *President*, T. Savage, M.D., M.R.C.P., F.R.C.S. (Birmingham). *Vice-Presidents*, Dr Apostoli (Paris); A. H. Freeland Barbour, M.D. (Edinburgh); Fancourt Barnes, M.D. (London); F. C. Batchelor, M.D. (Dunedin); Vincent Dickinson, M.D. (London); W. H. Fenton, M.D. (London); James Murphy, M.D. (Sunderland); H. A. Reeves, F.R.C.S. (London); Heywood Smith, M.D. (London); J. W. Taylor, F.R.C.S. (Birmingham); Professor W. J. Smyly, M.D. (Dublin); W. Gill Wylie, M.D. (New York). *Treasurer*, J. A. Mansell Moullin, M.D. (London). *Librarian*, George Granville Bantock, M.D. (London). *Council*, C. H. Bennet, M.D. (London); Professor J. W. Byers, M.D. (Belfast); G. Cleghorn. M.D. (New Zealand); T. M. Dolan, M.D. (Halifax); C. Godson, M.D. (London); W. C. Grigg, M.D. (London); T. B. Grimsdale, M.B. (Liverpool); R. H. Hodgson, M.R.C.S. (London); F. Bowreman Jessett, F.R.C.S. (London); L. Jones, M.D. (London); J. Macpherson Lawrie, M.D. (Weymouth); E. Holland, M.D. (London); J. A. Shaw Mackenzie, M.B. (London); H. W. Maunsell, M.D. (London); H. Michie, M.B. (Nottingham); J. R. Morison, F.R.C.S. (Newcastle); Professor T. Oliver, M.D. (Newcastle); F. A. Purcell, M.D. (London); A. W. Mayo Robson, F.R.C.S. (Leeds); Professor A. R. Simpson, M.D. (Edinburgh); Professor Japp Sinclair, M.D. (Manchester); W. Travers, M.D. (London); A. Wallace, M.D. (London); S. Sunderland, M.D. (London). *Editor of Journal*, Leith Napier, M.D., F.R.S. Ed. *Honorary Secretaries*, Leith Napier, M.D. (London); F. F. Schacht, M.D. (London).

H.R.H. THE DUKE OF CAMBRIDGE has accepted the presidency of a Committee which has been formed to present a Testimonial to Dr W. F. Dickinson on his retirement from the office of Senior Physician to St George's Hospital, of which His Royal Highness is a Vice-President. Among the members of the Committee are the Duke of Westminster, the Earl of Cork and Orrery, Mr Shaw Stewart, and Colonel Haygarth, Vice-Presidents of the Hospital; Mr J. R. Mosse, Treasurer; Sir Henry Acland, Admirals Sir George Willis and Sir W. Houston Stewart, Sir George Humphry, Sir Francis Laking, Surg.-gen. Cornish, and a number of Dr Dickinson's past and present colleagues and pupils and former students of the St George's Medical School.

THE LIQUOR CARNIS COMPANY'S PREPARATIONS.—We are informed that Messrs Duncan, Flockhart, & Co., Edinburgh, now hold sample cases of Virol, Caffyn's Malto-Carnis, Liquor Carnis, and Carnis Suppositories at the call of any medical practitioners who may not have already received one.

WE have again received a copy of the *A B C Medical Diary and Excerpta Therapeutica* published by Messrs Burroughs, Wellcome, & Co. Containing, as it does, space for recording visits to 56 or 112 patients, with pages for cash accounts, obstetric, vaccination, and Factory Act engagements, it will be useful to the busy practitioner. In such compass also, it contains nearly 200 pages of therapeutic information, with references to authorities. Indeed, for the man of one book this certainly forms a compact and useful pocket companion.

MESSRS BURROUGHS, WELLCOME, & CO. have added another most ingenious little box to their already long list of contrivances for assisting the medical man in his work. They have a selection of Ophthalmic Tabloids—light, smooth, and soluble—by which every local application can be made to the conjunctiva with great ease and comfort, in most cases simply by placing the tabloid on the covered eyelid, in two of them by previously dissolving the tabloid. These tabloids are supplied in tubes of 25, except in the case of Homatropia, in which each tube holds only 12, at the moderate price of 6s. per dozen tubes. Dr Ward Cousins has invented an ingenious little instrument of celluloid, with an india-rubber ball attached, by which the tabloids can be easily and painlessly inserted. The ophthalmic case, which can be carried in the waistcoat pocket, contains a medicine dropper, camel-hair brushes, a tabloid holder, a small glass mortar and pestle, and nine tubes of ophthalmic tabloids. Price 7s. 6d.

The same Firm have also prepared a very simple and ingenious chromatic dial for testing colour perception, and a convenient set of test types. Price 2s.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

January 1894.

DEAR SIR,—Will you kindly grant me space in your pages for the following remarks? The interesting paper lately sent to the

Century magazine by Miss Simpson about her father, Sir J. Y. Simpson's introduction of chloroform gives a different account of some of the preliminary details to that of Dr Matthews Duncan, which is referred to in Sir Robert Christison's Memoir. The event occurred before Miss Simpson was born, so she is in no way personally responsible for her version of the story; but as an exact statement of facts is always desirable, it may be well to give also Dr Matthews Duncan's account of it. A few days before the evening the discovery was completed, Dr Simpson—he was not then a baronet—took Dr Duncan to the laboratory of Dr Gregory, Professor of Chemistry, Edinburgh University. Along with him they examined many preparations possessing respirable vapours. A selection of several was made, and afterwards placed with other like bottles in an oaken cupboard which stood in a waiting-room behind the dining-room of Dr Simpson's house. A principal part of Dr Duncan's duties as Dr Simpson's assistant was to experiment with every kind of chemical substance which had any smell; so he had considerable experience of all sorts of vapours. The next morning, after trying several of the new bottles with a disappointing result—one of them gave him a sudden, peculiar headache; he took another, and respiring its vapour, found himself on the floor, awaking from a quiet swoon, which the timepiece showed must have lasted more than ten minutes. The following morning he tried the substance again to make sure, and took the first opportunity to tell Dr Simpson his favourable opinion of it. The compound was then tested after supper, as Miss Simpson relates, to her father's entire satisfaction. He immediately considered the discovery of an admirable anæsthetic fully accomplished. His remark beforehand, on entering the room, that here was something to turn the world upside down, which Miss W. Grindlay "persists" in remembering, confirms Dr Duncan's statement. The substance was not then called chloroform in Edinburgh. I have an idea, which may be quite a mistaken one, that I was told later it had a name something like chloride of formyle. Dr Duncan never dreamt of claiming the discovery. He was Dr Simpson's assistant, and had all along been acting for him. He allowed, however, that he felt somewhat disappointed when, soon after, Dr Simpson gave a monograph to the public regarding the discovery of this anæsthetic, in which none of these antecedent details was alluded to. For months he had been working enthusiastically, and to the injury of his health, with all kinds of chemicals, but loyalty to his chief kept him silent.

Professor Miller's rather sensational account of the decisive evening Dr Duncan considered, on the whole, correct.

These names of men long dead take me to a far, but unforgotten past, for I was a contemporary.—Believe me, yours truly,

I. Newlands.

PUBLICATIONS RECEIVED.

Chas. H. Bushong, M.D.,—Modern Gynecology: A Treatise on Diseases of Women. Henry Kimpton, London, 1894.

James F. Goodhart, M.D. Aberd., etc.,—On Common Neuroses. Second Edition. H. K. Lewis, London, 1894.

John Fletcher Horne, M.D.,etc.,—Trephining in its Ancient and Modern Aspect. John Bale & Sons, London, 1894.

Prof. A. Laveran,—Paludism. Translated by J. W. Martin, M.D. The New Sydenham Society, London, 1893.

Prof. Paul Lefert, — La Pratique des Maladies du Système Nerveux dans les Hôpitaux de Paris. J. B. Baillière et Fils, Paris, 1894.

Dr Alfred Levertin,—Dr G. Zander's Medico - Mechanical Gymnastics: Its Method, Importance, and Application. P. A. Norstedt & Sons, Stockholm, 1893.

G. Frank Lydston, M.D ,—Stricture of the Urethra. The W. T. Keener Co., Chicago, 1893.

John M'Caw, M.D., etc.,—Aids to the Diagnosis and Treatment of Diseases of Children. Baillière, Tindall, & Cox, London.

John D. Malcolm, M.B., C.M.,—The Physiology of Death from Traumatic Fever. J. & A. Churchill, London, 1893.

Thomas H. Manley, A.M., M.D.,—Hernia: Its Palliative and Radical Treatment in Adults, Children, and Infants. F. J. Rebman, London, 1893.

Edward C. Mann, M.D.,—A Treatise on the Medical Jurisprudence of Insanity. Matthew Bender, Albany, New York, 1893.

Dr P. Mannheim,—Der Morbus Gravesii (sogenannter Morbus Basedowii). August Hirschwald, Berlin, 1894.

Brownlow R. Martin, A.B. & M.B., etc., —A Practical Treatise on Diphtheria and its Successful Treatment. Baillière, Tindall, & Cox, London, 1894.

Christopher Martin, M.B., etc.,—The After-treatment of Cases of Abdominal Section. Simpkin, Marshall, Hamilton, Kent, & Co., London, 1894.

F. H. Martin, M.D.,—Electricity in Diseases of Women and Obstetrics. The W. T. Keener Co., Chicago, 1893.

Medical Diary and Visiting List for 1894. Burroughs, Wellcome, & Co., London, 1893.

Henry Morris, M.A., M.B.,—A Treatise on Human Anatomy, by various Authors. J. & A. Churchill, London, 1893.

Malcolm Morris,—Diseases of the Skin. Cassell & Co., Limited, London, 1894.

Honnor Morten and H. F. Gethen,—Tales of the Children's Ward. Sampson Low, Marston, & Co., London, 1894.

Philip E. Muskett,—The Art of Living in Australia. Eyre & Spottiswoode, London.

J. Inglis-Parsons, M.D., etc.,—The Healing of Rodent Ulcer by Electricity. John Bale & Sons, London, 1893.

Louis C. Parkes, M.D. Lond., etc.,—Infectious Diseases, Notification and Prevention. H. K. Lewis, London, 1894.

Leslie Phillips, M.D.,—Medicated Baths in the Treatment of Skin Diseases. H. K. Lewis, London, 1893.

Prof. S. Pozzi, M.D.,—A Treatise on Gynæcology, Clinical and Operative. Vol. 3. New Sydenham Society, London, 1893.

N. Senn, M.D.,—A Syllabus of Surgery. W. B. Saunders, Philadelphia, 1894.

J. Edward Squire, M.D. Lond., — The Hygienic Prevention of Consumption. Charles Griffin & Co., London, 1893.

Gordon Stables, M.D., C.M.,—The Wife's Guide to Health and Happiness. Jarrold & Sons, London.

Statistical Report of the Health of the Navy for the year 1892.

W. R. H. Stewart, F.R.C.S.E., etc.,—Aids to Otology. Baillière, Tindall, & Cox, London.

James Hutchison Stirling, F.R.C.S., LL.D., — Darwinianism: Workmen and Work. T. & T. Clark, Edin., 1894.

S. A. K. Strahan, M.D.,—Suicide and Insanity: A Physiological and Sociological Study. Swan Sonnenschein & Co., London, 1893.

W. Bezly Thorne, M.D., etc.,—The Open-air Treatment of Phthisis. J. & A. Churchill, London, 1894.

Transactions of the Association of American Physicians. Eighth Session. Vol. 3. Philadelphia, 1893.

Transactions of the American Gynæcological Society. Vol. 18. Philadelphia, 1893.

Transactions of the American Ophthalmological Society, 29th Annual Meeting. Hartford, 1893.

Transactions of the American Otological Society. Vol. 5, Part 3. New Bedford, Mass., 1893.

Transactions of the American Surgical Association. Vol. 11. Edited by De Forest Willard, M.D. William J. Dornan, Philadelphia, 1893.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Ninety-fifth Annual Session. Baltimore, 1893.

Transactions of the Ninety-Fourth Annual Session of the Medical and Chirurgical Faculty of the State of Maryland. Baltimore, 1892.

Transactions of the Obstetrical Society of London. Vol. 35, Part 3. London, 1893.

Transactions of the Pathological Society of London. Vol. 44. Smith, Elder, & Co., London, 1893.

Transactions of the Royal Academy of Medicine in Ireland. Vol. 11. Fannin & Co., Dublin, 1893.

A. Marius Wilson, M.D.,—Myxœdema; and the Effects of Climate on the Disease. The Scientific Press, Limited, London, 1894.

W. Hess und W. Zehender,—Bericht über die Dreiundzwanzigste Versammlung der Ophthalmologischen Gesellschaft, Heidelberg, 1893. Verlag von Ferdinand Enke, Stuttgart, 1893.

Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Continued from page* 794.)

DYSARTHRIC AND ANARTHRIC DISTURBANCES OF SPEECH DUE TO LESIONS AFFECTING THE MOTOR SPEECH-TRACTS.

BRIEF SKETCH OF THE ANATOMY AND PHYSIOLOGY OF THE MOTOR TRACTS FOR SPEAKING AND WRITING.

IN the foot of the ascending frontal convolution, as we have seen, there is situated a special centre for the adduction of the vocal cords in phonation—a centre which is the chief cortical representative of the Vocal Mechanism.[1] Behind this centre, are situated various other centres, for the movements of the lips, tongue, pharynx, etc.; which, together, may be taken as the common centre representing the Oral Articulative Mechanism. It is in these centres for phonation and oral articulation that the motor fibres which constitute the motor speech-tract have their origin.

The motor fibres for Writing, as we have also seen, have their origin in the cortical centre for the hand, which lies across the middle of the ascending frontal and ascending parietal convolutions, opposite the posterior extremity of the second frontal convolution.

In experiments upon the brains of living animals, important differences have been observed, it will be remembered, in the effects produced by electrical stimulation of these various centres. In the first place, it has been found that stimulation of the centre for phonation on one side of the brain (either the left or the right side) causes a perfectly equal adduction of both cords; the cortical representation of this movement being perfectly bilateral. On the other hand, the movements caused by stimulation of the various sub-centres representing the oral articulative mechanism, though bilateral, are stronger upon the opposite than upon the same side; the cortical representation of these movements being indeed bilateral, but not being perfectly so. Further, stimulation of the centre for the hand causes movements in the opposite hand only, not in both hands; the cortical representation of the movements of the hand being unilateral, not bilateral. For the explanation of these differences, I must refer the reader to Broadbent's law, which has already been considered in a former paper.

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[1] To produce voice, it will be remembered, there must be, besides adduction of the cords, also expiratory pressure of air. The centre for the expiratory effort, however, has not yet been determined.—It may here be added, that in monkeys, Semon and Horsley have not found a centre for abduction of the cords, though they have found one in cats.

The motor centres for speaking and writing are portions of the General Motor Area of the cortex. This general motor area occupies the middle third of each hemisphere, in front of and behind the fissure of Rolando; and in it are centres for all the voluntary movements of the trunk and limbs. Throughout the whole of this area, there are, in the cortex, large multipolar cells, known as the cells of Betz, which are supposed to be specially motor in function. It is the opinion of many authorities that the axis-cylinders of the fibres which go to form the General Motor Tract, and which transmit the motor commands of the cortical motor centres to the lower motor centres in the medulla and spinal cord, are really prolongations from the cells of Betz, and are therefore, vitally and physiologically, only parts of these cells.

I think it will help us to understand the course of the motor fibres for speaking and writing, if we consider them in connexion with the general motor tract, of which they form a part.

Converging from the various centres in the general motor area of the cortex, the white conducting fibres of the General Motor Tract pass inwards towards the centre of the hemisphere, among the other white fibres of its centrum ovale; until, on reaching the level of the upper surface of the corpus striatum and optic thalamus, they arrange themselves in a definite order, and constitute a flattened band; which is prolonged downwards towards the crus, as the motor part of the internal capsule.

The exact order in which the bundles of fibres from the various centres in the general motor area are arranged in the motor part of the Internal Capsule has been demonstrated lately by Beevor and Horsley,[1] who have solved the problem by a most elaborate series of experiments upon the brain of the macaque monkey. Of course I do not mean to give the results of these experiments in detail. It will suffice to say that the method adopted was to make a horizontal section of the hemisphere low enough to cut through the middle of the optic thalamus and corpus striatum, and thus cut across, and expose to view in the section, the internal capsule; and then to stimulate the cut ends of the fibres in the motor part of the internal capsule, and note the movements caused by such stimulation. The following diagram, which I copy from Professor Ferrier's recent work on

[2] *Phil. Trans. of the R. Society*, 1890, B., vol. clxxxi., p. 49.

Cerebral Localisation, summarises the chief results of the experiments. It represents a section of the brain of a macaque monkey, made at the level above mentioned. It exhibits well the position and relations of the internal capsule; showing how the anterior limb of the capsule lies between the lenticular nucleus and the caudate nucleus of the corpus striatum, and the posterior limb between the lenticular nucleus and the optic thalamus; and how, uniting the two limbs, anterior and posterior, there is the "knee" or knee-like bend—an important landmark.

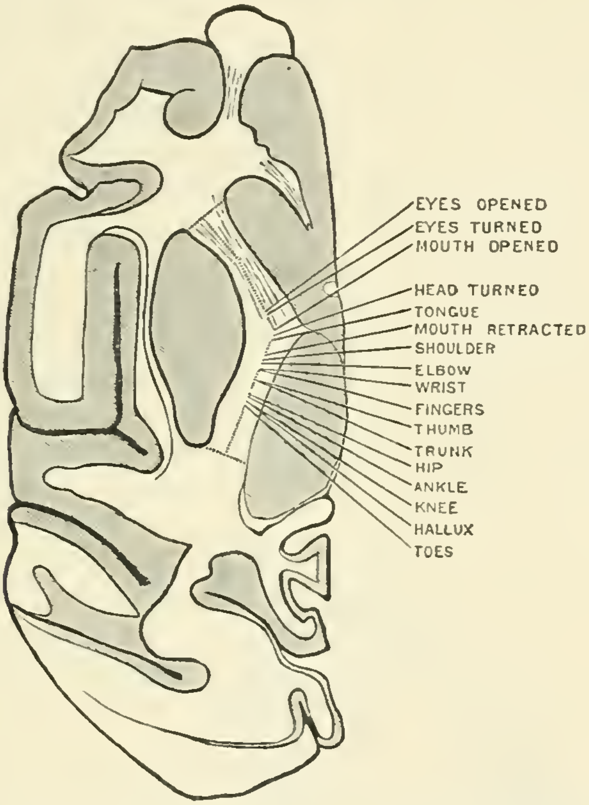

Fig. 16.—(After Ferrier.)—The sketch, which was made for Professor Ferrier's work by Dr Beevor, shows the arrangement of the motor fibres of the internal capsule, according to Beevor and Horsley.

Let the reader note, in the diagram, the portion of the internal capsule which has been found to be composed of motor fibres belonging to the general motor tract. This portion is the middle third. It begins a little in front of the knee, and extends backwards, so as to include the knee and more than half of the posterior limb of the capsule. The remaining portions of the capsule—roughly, the anterior and the posterior thirds—are not motor in function. The anterior third is derived from the cortex of the præfrontal convolutions, and its functions are unknown. The posterior third is composed of sensory fibres which pass upwards in the capsule, to end ultimately in the gyrus fornicatus and other cortical areas for sensation.

Before leaving this diagram, let us note in it the position of the motor fibres for the tongue, mouth, etc.,—the oral articulative mechanism. It will be observed that they lie far forwards in the motor division of the capsule, at and about its knee. The situation for the fibres of the vocal mechanism is not shown in this diagram; but I may say that, according to the results of a recent elaborate investigation by Semon and Horsley,[1] the fibres for adduction of the vocal cords are situated "in almost exactly the middle of the posterior limb of the capsule."

As we trace the general motor tract onwards to the crus cerebri, we may remark that, in passing downwards, within the capsule, to the base of the brain, the fibres pass on directly, without forming connexions with the cells in the corpus striatum or optic thalamus. It was for a long time supposed that the corpus striatum was a great motor ganglion, interposed in the course of the motor tract, and acting as a centre for coördination; but this has now been disproved, and all that, at present, we can say about the corpus striatum is, that its function is as yet unknown. It is a *terra incognita*, awaiting future exploration.

If we now pass to the crus cerebri, we find that the General Motor Tract occupies the middle third of the crusta,—the part of the crus that is visible to us when we turn over the brain and expose its base to view. The relations of this motor part of the crusta are shown in the following diagram (Fig. 17), in which the general motor tract of the left side is shown by dark shading. It is this part which becomes degenerate and wasted when the general motor tract has been cut across by lesion higher up in the brain.

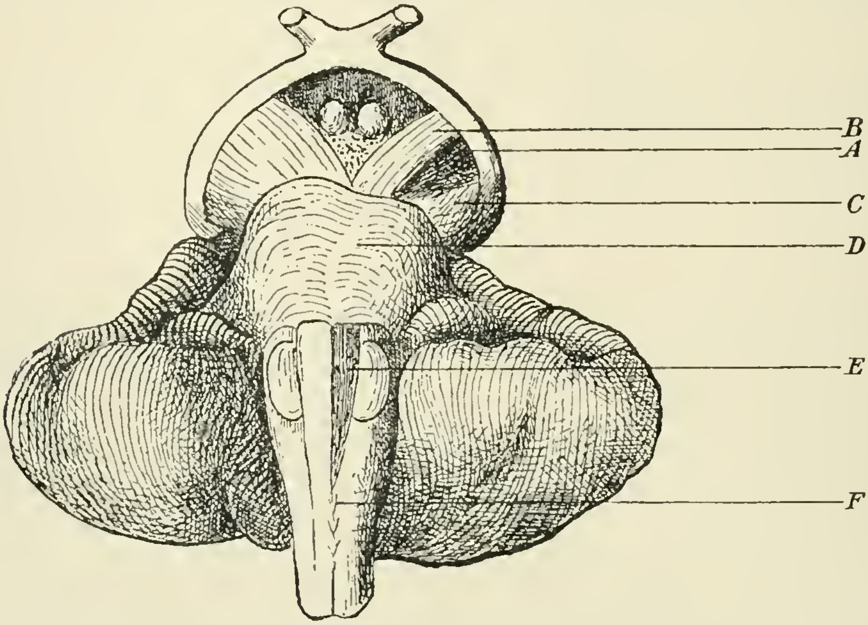

FIG. 17.—(After Charcot.[2])—*A*, the general motor tract (pyramidal tract) degenerated. *B*, the internal fasciculus from the præfrontal convolutions; *C*, the external, sensory, fasciculus; *D*, the pons; *E*, the anterior pyramid degenerated; *F*, the decussation of the pyramids.

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[1] *Phil. Trans. of the R. Society*, B., 1890, p. 187.

[2] *Leçons sur les Localisations dans les maladies du Cerveau*, 1887, p. 215.

In the Crus, the general motor tract, as shown in the diagram, constitutes about a third—the middle third—of the crusta. The inner third is composed of the fibres, above mentioned, which are derived from the præfrontal convolutions; and the outer third is composed of the sensory fibres which are prolonged upwards to form the posterior part of the internal capsule. In the middle or motor third are contained the fibres for phonation and oral articulation, and also the fibres for the movements of the hand, as in writing. The fibres for phonation and oral articulation are believed to lie in the innermost part of the general motor tract, within its inner edge. The fibres for the movements of the hand probably lie close to the outer side of them.

I need not describe the course of the general motor tract through the Pons Varolii; but I should like it to be noted that here, in the Pons, the fibres for phonation and oral articulation diverge, in their course, from the rest of the general motor tract. The rest of the general motor tract, including the fibres for the hand, passes on through the Pons, and emerges at its lower end, as shown in Figure 17, to constitute the Anterior Pyramid of the medulla. At the lower end of the medulla the tracts from the two hemispheres cross over, in greater part, at the "Decussation of the Pyramids" to the opposite sides.[1] They are afterwards continued downwards within the lateral column of the spinal cord, to the various levels at which their fibres individually terminate by forming connexions with the motor cells of the anterior cornua. To these spinal cells and their nerve fibres they transmit the motor influences conveyed by them from the cortex; and, by the spinal nerves, these influences are carried onwards to the muscles.

Thus the fibres whose function is to innervate the movements of the right hand pass downwards, after crossing at the decussation, within the lateral column of the cervical cord, and terminate by coming into physiological connexion, at the lower part of the cervical enlargement, with the motor cells of the right anterior cornu. From the cornu spring the nerve fibres that are ultimately distributed to the muscles of the hand.

Returning now to the Pons, and to the fibres for phonation and oral articulation, we find that in the Pons these fibres diverge in their course from the rest of the general motor tract. Instead of passing onwards, with the rest of the tract, to the pyramids and their decussation, they decussate, along with other fibres for the face, in the lower part of the pons; and thereafter they soon terminate by coming into anatomical and physiological connexion with various motor nuclei in the floor of the fourth ventricle. From the cells of these nuclei, which are the equivalents of the motor cells in the anterior cornu of the cord, spring the motor nerves for phonation and oral articulation which carry the motor influences onwards to the muscles.

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[1] In these brief notes, I have, for the sake of simplicity, omitted mention of those fibres of each pyramid which are continued downwards in the cord without crossing at the decussation of the pyramids.

Before I finish these brief notes about the course of the speech tracts, let me say a word about the general plan on which the whole motor tract is formed.

In the motor tract, there are two sets of cells and two sets of fibres. Proceeding from above downwards, we find the first set of cells to be the motor cells (represented, in all probability, by the large cells of Betz) in the motor cortex; and the first set of fibres to be the fibres which are prolonged downwards from these cells, through the hemisphere, crus, and pons, till they terminate, in the case of the fibres for the hand, by becoming connected with the large motor cells in the anterior cornu at the lower part of the cervical enlargement, and, in the case of the fibres for phonation and oral articulation, by becoming connected with the motor nuclei in the medulla.

The second set of cells are the large motor cells in the anterior cornua of the spinal cord, and in the motor nuclei of the medulla; and the second set of fibres are the motor fibres proceeding from these cells to be distributed to the various muscles.

In teaching, I have, for a number of years, found it very convenient to designate the first set of cells, together with the fibres prolonged from them, as the "First Trophic Realm in the Motor Tract," and the second set of cells, with the fibres prolonged from them, as the "Second Trophic Realm in the Motor Tract." The terms are convenient, not because they teach anything new, but because they bring into relief the two divisions of the motor tract; and because they keep us in mind of an important function which is subserved by the motor tract in addition to its motor function,—I mean its Trophic function. It is a fact now generally recognised, that the two sets of cells discharge not only motor force, but also trophic force (nourishing nerve force), and that this latter force is as essential for the nutrition of the structures to which it is supplied as is a supply of blood from the bloodvessels. The vitality, both of the two sets of fibres in the motor tract and also of the muscles to which the nerves are distributed, depends upon the supply of this trophic force from the nerve cells.

Take first the nerve fibres:—We find that if the motor cells of the first trophic realm are destroyed, then the fibres of the realm, which are merely prolongations of the cells, become degenerate down to their junctions with the cells of the second trophic realm; and that, in like manner, if the cells of the second trophic realm are destroyed, then the fibres of that realm undergo degeneration and destruction down to their termination in the muscles. So, again, when the fibres of either realm are cut across, the part above the section, being still in connexion with its cells, continues to live, while the part below the section undergoes decay and death. These are but illustrations of the well-known law of Waller, which has taught us that the axis-cylinder of a nerve fibre, however long it may be, is but a part of the cell from which it springs, and that throughout its length it depends upon the cell for its trophic supply, and therefore for its vitality. It is owing especially to the teaching of Charcot[1] that the full importance of the law of Waller in relation to nervous pathology is now generally recognised.

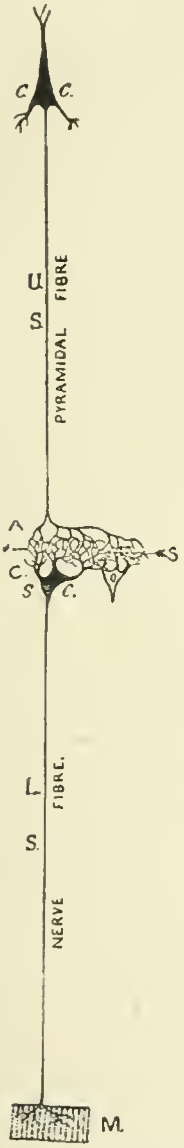

Fig. 18.—(After Gowers.[2])—*C. C.*, a cortical motor cell; *S. C.*, a spinal motor cell; M., a muscle.

The accompanying diagram, which I have taken from Dr Gowers's valuable work on *Diseases of the Nervous System,* shows well the constitution of each of the two trophic realms in the motor tract,—the cell *C. C.* with the fibre U. S. representing the first; and the cell *S. C.* with the fibre L. S. the second trophic realm. Dr Gowers terms them, not Trophic Realms, but Upper and Lower Segments, of the motor tract.

If we next take the muscles, we find that for them, too, the nerve cells in the two trophic realms of the motor tract are fountains for the supply of trophic energy. It would appear that this trophic energy for the muscles is derived in part from the cells of the first, and in part from the cells of the second trophic realm. Springing from the cells of the first trophic realm, the trophic energy for the muscles would appear to flow by the fibres of that realm, on into the cells of the second trophic realm. Thence, after getting a tributary supply from the cells of the second trophic realm, the trophic energy flows on in full stream, along the motor nerves, to the muscles.

We can now understand the great difference in the condition of paralyzed muscles that is presented, according as the lesion causing the paralysis is situated in the first or in the second trophic realm of the motor tract. Let the lesion be situated in the first trophic realm,—the motor paralysis may be complete, but the paralyzed muscles do not often waste markedly or rapidly; because, though cut off from the trophic influences of the cells of the first trophic realm, they are still in full connexion with the cells of the second realm, and continue to be supplied with trophic power from them. On the other hand, let the lesion be situated in the cells or fibres of the second trophic realm, and then not only is there paralysis, as complete as in the other case, but there is also rapid wasting of the paralyzed muscles; because, with the interruption of motor conduction, there is, in this case, also complete cutting off of the trophic supply that had streamed to the muscles from the cells of both trophic realms.

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[1] See, for example, his work on *Cerebral Localisations,* 1887, already referred to.

[2] *Diseases of the Nervous System,* vol. i. p. 116.

I should have liked to complete the description of the accompaniments of each of these two forms of paralysis,—to have alluded, for example, to the exaggeration of reflexes, and the tendency to spasticity in the muscles, exhibited when paralysis is due to lesion in the first trophic realm; and to the absence of reflexes, the flaccidity of the wasting muscles, and their "reactions of degeneration," when the paralysis is due to disease of the second trophic realm;—but these are matters treated of and explained in every text-book, and I must not make this sketch too long. I content myself with asking the reader's special attention to the *wasting* of muscles that is characteristic of a paralysis due to lesion in the second trophic realm; and with reminding him that in chronic slowly advancing cases, such as are exhibited in the diseases progressive muscular atrophy and progressive bulbar paralysis, this wasting is often attended by fine fibrillar movements in the wasting muscles.

One other matter I should like to allude to before concluding these brief notes upon the anatomy and physiology of the speech-tracts. I have already indicated that, according to the results of experimental investigation by Krause, and by Semon and Horsley, the motor representation of adduction of the vocal cords is bilateral, so that stimulation of the centre for this movement on one side of the brain causes equal adduction of both vocal cords. I would now like to add that Semon and Horsley have also subjected the motor *tract* for adduction of the cords to experimental investigation, and have found that stimulation of any part of the tract in its first trophic realm causes precisely the same bilateral adduction of the cords as is produced by stimulation of the cortical centre from which it springs.

PATHOLOGY OF THE MOTOR TRACTS FOR SPEAKING AND FOR WRITING.

Before passing to the consideration of the tracts for phonation and oral articulation—the speech-tract proper,—it may, I think, be well to make here a short note about the pathology of the motor tract for writing. This will clear our way for the consideration of the speech-tract proper.

Note on the Pathology of the Motor Tract for Writing.

The tract for writing is, of course, the tract for the movements of the right hand. Its first trophic realm begins in the cortex, as the motor centre for the hand, which is situated about the middle of the left ascending frontal and ascending parietal convolutions, close behind the centre D, as already explained. Its second trophic realm begins in the right anterior cornu of the spinal cord, at the lower end of the cervical enlargement. Apart from what has already been said about the supposed relations of the motor centre for the hand with the centre D, I have little to say about the motor tract for writing that can apply specially to that act, and not also to the other movements of the hand. In common cases of gross cerebral lesion producing right hemiplegia, the tract for the hand is of course very frequently involved, along with the rest of the general motor tract; and, again, in lesions in the upper part of the spinal cord there is often paralysis of one or both hands. But, as we have seen, if the speech centres are intact, and the left hand unaffected, the patient can still write with that hand, though the right be paralyzed.

Of greater interest in relation to the act of writing is the fatigue-neurosis known as Writer's Cramp, which has already been considered in the third paper of this series. It will be remembered that, in cases of this fatigue-neurosis, it is not always easy to determine which part of the tract for writing has been specially enfeebled by the fatigue; and that in some cases there is ground for the belief that it is the cortical cells of the first trophic realm that are enfeebled, in others the spinal cells of the second trophic realm, in others the nerve-fibres of the second trophic realm, and in others, perhaps, the muscular fibres themselves.

Pathology of the Motor Tract for Speaking.

The task that still remains for us is, to make note of the various lesions that may interfere with or destroy the speech-tract, at one or another level in its course. We shall have to treat first of the lesions that may damage the speech-tract in its first trophic realm; and next, of those that may damage it in its second trophic realm.

The speech-tract, as we have seen, is composed of fibres belonging to the vocal mechanism (such as those whose stimulation causes bilateral adduction of the vocal cords), and of fibres belonging to the oral articulative mechanism. In treating of the pathology of the tract in its first trophic realm, it will, I think, be well to take these two sets of fibres together, and to regard them as constituting a common tract; because, throughout their course in the first trophic realm, the two sets of fibres lie so close together that it is scarcely possible for a lesion to damage one set without also damaging the other. When, however, we come to consider the second trophic realm of the speech-tract, it will be best to take each set of fibres separately; because the two sets are, in the second trophic realm, represented by different nerve trunks, and are therefore, in conditions of disease, often damaged or destroyed separately.

Lesions in the First Trophic Realm.

1. *Unilateral Lesions in the Cerebrum.*—Speech, as we have seen, is a function which is discharged essentially by one hemisphere of the brain, viz., the hemisphere that has been educated to it—this being the left hemisphere in right-handed people, and the right in left-handed people. We have already studied in detail the complete or almost complete destruction of the faculty of producing speech which results when the motor centre B, in the educated hemisphere, is destroyed. We have also seen that if a sub-cortical lesion entirely destroy the white matter immediately beneath the centre B, the centre will be rendered functionally inert, and there will result an aphasia in every way identical with that produced by destruction of the centre itself. Further, we have seen that a sub-cortical lesion at a little distance from the centre B may be so situated as to cut across only the fibres proceeding downwards from B towards the medulla, and leave intact all the fibres connecting B with the other speech-centres. In this case, the type of aphasia produced is that which has been termed the sub-cortical or infra-pictorial motor type. It is characterised by the absence of amnesia verbalis, and by the retention of the power of writing —with the left, if not with the right hand. Patrick Keaney's case may be taken as a fair example of it.

Here, now, comes a question of some difficulty. If only one common strand of motor fibres (for the vocal and the oral articulative mechanisms) passed downwards from Broca's convolution to the cells of the second trophic realm in the medulla, then, clearly, the cutting across of that single strand by disease would always produec the same effect—complete motor disablement of speech,—at whatever level in the tract the lesion might be situated. In other words, motor aphasia of the infra-pictorial type would be produced, whether the tract were cut across at a little distance from Broca's convolution or at a great distance from it—say, in the crus cerebri. But we know that this is not the case: we know that the infra-pictorial type of motor aphasia is typically produced only when the motor tract has been damaged in the upper part of its course, somewhere between Broca's convolution and the upper part of the internal capsule. Lesions in the internal capsule involving the speech-tract, it is generally believed, do not produce aphasia (except indirectly by pressure, etc.); nor do lesions lower down, in the crus or pons. Such lesions may for a time seriously interfere with articulation, producing a dysarthric disturbance of speech that commonly takes the form of slurring; but the words attempted are evidently the right ones, though, from the slurred and slovenly articulation, it may be difficult to recognise them. After a time, even this dysarthria may pass away, though the break in the motor tract that originally caused it remains. Two problems, therefore, present themselves for solution. (1.)

Why does a lesion in the speech-tract at or below the internal capsule not produce infra-pictorial motor aphasia? and (2.) Why, in the majority of cases, is the dysarthria produced by such a lesion recovered from, after a time?

These two problems can be solved only by our adopting the view that the speech-tract which leaves Broca's convolution is not a single, but a double tract. In other words, there is not only the tract which passes downwards in the same hemisphere directly towards the medulla, but also a second tract which, passing across from Broca's convolution, by the corpus callosum, to the corresponding convolution of the opposite side, establishes connexions between the two convolutions, and enables them to act in motor unison under the guidance of the psycho-motor pictures stored in Broca's convolution. After forming this connexion with the motor convolution of the right side, this tract, it is believed, passes to the internal capsule of that side, and then downwards towards the medulla, in a course similar to that of the direct tract in the left hemisphere. This second tract from Broca's convolution has, conveniently, been termed the "callosal speech-tract." Wernicke[1] suggests that in the normal condition of the brain three-fourths or four-fifths of the energy requisite for the innervation of speech may be furnished by the left hemisphere, and the remaining fraction by the right hemisphere. There seems every reason to believe that, between Broca's convolution and the upper part of the left internal capsule, the two parts of the double speech-tract —the direct for the left hemisphere, and the callosal for the right —lie close together or very near each other; and that in this part of their course they are often cut across together by the same lesion. It would appear, for example, that a lesion in the upper and anterior part of the Island of Reil may, by penetrating into the subjacent white matter, cut them both across, and so produce the infra-pictorial variety of motor aphasia. At and below the upper part of the internal capsule, on the other hand, they increasingly diverge from each other, and are less and less likely to be cut across by the same lesion, until, on reaching the base of the brain, they come near each other again in the Pons; and therefore lesions at and below the upper part of the internal capsule usually produce merely a dysarthria or difficulty of articulation, and not an aphasia of the infra-pictorial motor type. The dysarthria is usually most marked, and most apt to be permanent, when the tract belonging to the left hemisphere is cut across; but dysarthria is also of pretty common occurrence when the lesion is in the right hemisphere; and Wernicke is in such cases inclined to attribute it to the cutting across of the tract in that hemisphere. In either case, the dysarthria often, after a time, passes away; and it does so most speedily when the lesion is in the right hemisphere

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[1] "Ueber die motorische Sprachbahn, und das Verhältniss der Aphasie zur Anarthrie," *Fortschr. der Medicin*, ii. 1884, p. 412.

—because the remaining division of the speech-tract may soon acquire the power of discharging perfectly the function that in health is discharged by the two divisions together.

I shall not attempt here to describe the gross lesions of the brain that are capable of destroying or temporarily disabling the speech-tract in one or other of the cerebral hemispheres. It will be sufficient to remind the reader that the chief of them are apoplexy, softening, and tumour; and that by any one of these conditions the speech-tract may, in some part of its course, either be directly involved and destroyed, or, lying in the neighbourhood of the lesion, be merely disabled without being destroyed.

2. *Bilateral Lesions in the Cerebrum.*—A gross cerebral lesion is, in the vast majority of cases, unilateral; one single focus of disease being developed in one or other hemisphere. But it occasionally happens that two foci are developed, either simultaneously or in succession; and even that the two occupy corresponding positions in the hemispheres. Such symmetrical lesions may involve the speech-tracts on both sides.

I have already, in a former paper, illustrated the effects produced by symmetrical destruction of the motor speech *centres,* by reference to a well-known case reported by Dr Barlow. In that case, it will be remembered, there was, first, motor aphasia from destruction of Broca's convolution. But this was recovered from, by the convolution of the opposite side being educated to assume the function of speech. Then there occurred a second lesion, which destroyed the convolution of the opposite side. The result was not only a return of motor aphasia—which now remained permanent,—but also the establishment of paralysis in both sides of the mouth and tongue—a form of paralysis so similar in its symptoms to the paralysis caused by disease of the bulbar nuclei that it has been termed Pseudo-Bulbar Paralysis. The chief difference between the two is the absence of wasting of the tongue and other affected muscles in the pseudo-bulbar paralysis, and the marked wasting that attends upon true bulbar paralysis—a difference due to the fact that in the one case it is the first, and in the other the second trophic realm, that is the seat of the disease.

Pseudo-bulbar paralysis being thus the well-known effect of bilateral destruction of the motor centres for phonation and oral articulation, it will be readily understood that the very same effect may be produced by bilateral lesion of the motor tracts leading from these centres. But in this case there would, almost certainly, be other paralytic accompaniments. There might, for example, be paraplegia in arms and legs—a pseudo-spinal along with the pseudo-bulbar paralysis;—because the various motor strands in the general motor tract lie closer together than the various cortical motor centres from which they spring, and are therefore far less liable to be singled out by a gross lesion and destroyed separately.

These symmetrical gross lesions are rare, and are therefore not very important. Of far greater interest and importance, in relation to speech, are the *fine* lesions—of the nature of sclerosis of the connective tissue—which affect both hemispheres simultaneously, and often seriously interfere with the conduction of motor power along both speech-tracts. As a typical example of such bilateral sclerosis, I shall select the disease known as Multiple or Insular Sclerosis. It is the most commonly met with of the group, and it produces well-marked effects upon the production of speech.

Without attempting to describe the symptoms and pathology of *Multiple Sclerosis,* I may remind the reader that it is a disease most common between the ages of 20 and 35; that among its most characteristic symptoms are:—the embarrassment of speech, to be presently noted; nystagmus; coarse trembling or jactitation of the arms and hands, during performance of voluntary movements; weakness, incoördination, and sometimes spasticity of the legs; enfeeblement of the intellect; and, in the later stages, the occurrence of apoplectiform attacks, the development of symptoms pointing to involvement of the bulb—such as loss of the power of swallowing,—and a general failure of nutrition which betrays itself in a tendency to the formation of bed-sores. Dr Gowers states that the duration of the disease is from two to fifteen years, the average duration being from two to six years.

Pathologically, the disease consists in an overgrowth of the connective tissue of the brain and spinal cord—an overgrowth that is not diffuse or general, but is limited to scattered spots or patches in the white matter of the brain and cord, and also in the white matter of the crura, pons, medulla, and cerebellum. As microscopic examination of the sclerosed patches shows that the axis-cylinders of the nerve fibres are often partly preserved in the midst of the overgrown connective tissue, it is supposed that the disease primarily consists in an overgrowth of the connective tissue, and that the atrophy of the nerve fibres is a secondary consequence of the pressure put upon them.

In the speech of Multiple Sclerosis, the most striking characteristic is the well-known slow and laborious utterance, in which, with evident effort, each syllable is enunciated separately and deliberately. This is the "*staccato* speech" of multiple sclerosis. Sometimes it is termed "scanning speech," because the effect of it on the ear of the listener is not unlike that produced when someone is heard scanning deliberately a line of Latin poetry. When the *staccato* character is extremely well marked, some individual syllables may, now and again, be shot out with explosive violence.

The slow *staccato* utterance of multiple sclerosis is believed to be due to the interference with conduction in the motor speech-tracts that is produced by the compression of the nerve fibres at points where they are passing through patches of sclerosis.

Along with the *staccato* utterance, there is often drawling of the syllables. As the disease advances, the *staccato* element is apt to become less striking, and the drawling and slurring more and more marked, until speech is at last reduced to an inarticulate drawl. I have in my ward, at the present time, a patient with multiple sclerosis, whom I have had under observation for about eight years. At first his speech was markedly of the *staccato* type; but, for the last two years, it has become more and more slurred and inarticulate. When, for example, he now tries to say "good morning," the words are produced as a monotonous drawl, in which only traces of the m and n and something of the vowel sounds are recognisable. He is in the last stage of the disease: totally paralyzed in the legs, and almost totally so in the arms; and requiring to be fed with the stomach-tube, as he has lost the power of swallowing.

Though *staccato* utterance is most typically exhibited in multiple sclerosis, it would be a mistake to suppose that it occurs only in that disease. We have already seen that an element of *staccato* utterance is often present in the speech of general paralysis of the insane; and is met with also in the speech of some aphasic patients, when they are beginning to regain the power of speech by training the convolutions of the opposite hemisphere. Charcot emphasizes the resemblance between the speech of multiple sclerosis and that of general paralysis of the insane. He says,[1] "I even believe that, in a good many cases, apart from the help obtained from the consideration of accompanying phenomena, the distinction would be almost impossible. And that the resemblance may be still closer owing to the circumstance, that in multiple sclerosis, as in general paralysis of the insane, emission of words is sometimes preceded or accompanied—as you may remark in our patient—by a slight, as it were convulsive, contraction of the lips." Kussmaul, however (p. 664), holds that Syllable Stumbling, the most characteristic of all the features in the speech of general paralysis, never occurs in multiple sclerosis. In general paralysis, he says,—"Both articulate sounds and syllables are misplaced and thrown into confusion. To borrow Westphal's admirable illustration, the general paralytic, in trying to say 'artillery,' calls it 'artrallerary'; the patient with insular sclerosis, on the other hand, pronounces it 'ar-til-ler-y.'"

Alongside of the above notes about the speech of multiple sclerosis, I shall now insert a brief note about the speech of *Friedreich's disease;* as there is a pretty close resemblance between this speech and the speech of multiple sclerosis. Yet I would first state that we have no right to regard Friedreich's disease as a condition that causes its peculiar speech by interfering with conduction in the first trophic realm of the motor speech-tract. Friedreich's disease is essentially not a disease of the brain, but one of the spinal cord. Like tabes dorsalis, it is a sclerosis of the posterior columns of the cord; and, in its general symptoms, it resembles ordinary tabes dorsalis. But it differs from ordinary tabes in many particulars, some of the distinguishing features of Friedreich's disease being—(1), That it is very markedly a family disease, and often affects brothers and sisters in the same family—one after another acquiring it as they grow up to manhood or womanhood;—and (2), that, like multiple sclerosis, but not like tabes, it causes both nystagmus and a peculiar affection of speech.

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[1] *Leçons sur les maladies du système nerveux*, 1875, p. 236.

From the study of the cases of this disease published by Friedreich[1] and others, it may be seen that the characteristic disturbance of speech has in it, almost always, more or less of that *staccato* element which is so markedly present in the speech of multiple sclerosis. But this element may not be very striking. Often the utterance is merely slow and drawling, with that thickness or imperfection of articulation which is, I think, best described as "slurring," but which Friedreich in his description terms "lalling." It is a thick slurring articulation like that of inebriation, but differing from it in being slower and more laborious, and in having often in it a more or less pronounced element of *staccato* enunciation. Friedreich tells that some of his patients had sometimes to attempt difficult words over and over again, before succeeding in their enunciation.

In the very chronic course of Friedreich's disease, the derangement of speech is not one of the first symptoms to be developed. Its appearance is often delayed for a year or several years after the characteristic ataxia has shown itself in the limbs. Friedreich attributes the derangement of speech to changes in the medulla, and especially to a descending neuritis in the roots and trunks of the hypoglossal nerves; but this conclusion does not seem to have been confirmed by other observers, as Gowers remarks that—"The precise origin of the affection of articulation and of the nystagmus has not yet been traced."[2]

In tracing down the speech-tract, I may now pass over the Crura Cerebri with a very brief note. There is, indeed, scarcely anything to be said about the effects of lesions in one or other of the crura, further than that they closely resemble the effects of unilateral lesions of the tract in the internal capsule. A dysarthric disturbance of speech, of the nature of slurring, and usually of temporary duration, is apt to be produced when the speech-tract is cut across in either the right or the left crus. As in the case of lesion in the internal capsule, it is generally most pronounced when the lesion involves the left crus; but it may be more or less distinctly present, for a time at least, when it is the right crus that is involved.

3. *Lesions in the Pons.*—Leyden was right when, in 1867,[3] he

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[1] *Virchow's Archiv*, 1863, Bd. xxvi. and xxvii.; also *ibid.*, 1876, Bd. lxviii. and lxx.

[2] *Diseases of the Nervous System*, vol. ii., p. 355.

[3] *Berliner Klin. Wochenschr.*, 1867, Nos. 7, 8, and 9.

pointed out that in relation to dysarthric and anarthric disturbances of speech lesions of the pons are of special importance. It must be remembered that the speech-tracts from the two hemispheres are here no longer widely separated from each other. They are brought near together, even in the upper part of the pons, in which they lie parallel with each other. In the lower part of the pons, again, they actually cross each other in the middle line, on their way backwards to the nuclei of the medulla. This disposition of the two tracts in the pons renders them liable to be affected together; and when they are destroyed together total anarthria—utter speechlessness and voicelessness—results. It will be readily understood that in such cases there is also, as a rule, total paraplegia of both arms and legs; as the general motor tracts from both hemispheres are, like the two speech-tracts, apt to be involved together, owing to their juxtaposition. Coarse lesions in the pons, such as apoplexy, softening, and tumour, are the common causes of such total paralysis of speech and of voluntary motion; and such effects are most apt to be produced when the coarse lesion in the pons is central in its situation. On the other hand, unilateral lesion, in the upper part of the pons, may involve only one of the general motor tracts, including the portion of it that forms the tract for speech; and the result will then be, not a paraplegia, but a hemiplegia, and not an anarthria of speech, but a dysarthria. Even in such cases of unilateral lesion, however, the dysarthria is apt to be more than usually severe; because, along with destruction of one of the speech-tracts, there is apt to be also more or less disablement of the other, owing to pressure or to collateral disturbance. The two lie so near each other in the pons that one can scarcely be destroyed without such disturbance of the other.

In cases of central lesion of the pons, with total paraplegia, and total paralysis, it may be, of the face and eyes, as well as total speechlessness, it is, I think, well for us to remember, when in the presence of the patient, that though he may appear to be profoundly comatose he may really, for aught we know, be conscious. I remember one case of this kind in which the son of the aged patient, sitting by the bedside with his left hand in the right hand of his father, was startled by feeling his father press his hand repeatedly. The son may have been mistaken in thinking that the pressure was a message to him, communicated through the only channel that remained open,—the pressure may have been automatic and involuntary;—but I think it within the limits of possibility that the son was right in his opinion. The case was one of rapidly spreading lesion in the pons, which, after causing severe neuralgia in the right side of the face, caused left hemiplegia, and then ophthalmoplegia and partial right hemiplegia, with, ultimately, apparent coma. Some voluntary motor power may have lingered in the right hand, even when the patient was, to all appearance, in a condition of deep coma. I mention the case because it made so strong an impression upon me. Since knowing of it, I have always, each session, been careful to ask my students to bear in mind the possibility that a patient with severe lesion of the pons may really be conscious, though apparently comatose.

(*To be continued.*)

II.—CLINICAL LECTURE ON A CASE OF PRIMARY CONTRACTING KIDNEY.

By ALEXANDER JAMES, M.D., Physician to the Royal Infirmary.

GENTLEMEN,—The case which I propose to consider with you to-day is one, I believe, of primary contracting kidney.

W. R., aged 52, a photographer, was admitted to Ward 30 on Dec. 23rd, 1893, complaining of defective eyesight.

Family History.—Parents both dead, father at 42, mother older, causes of death unknown; two brothers dead, causes of death unknown; four sisters and one brother living; has had five children, all dead; two died, aged 20 and 25, from consumption.

Personal History.—Has always had a good home and been in comfortable circumstances; his work is for the most part indoors, but he gets plenty of leisure for outdoor exercise; has taken beer rather freely, but seldom drinks spirits; has had gonorrhœa, not syphilis.

Had no illness until three years ago, when he had an attack of influenza, which confined him to bed for two weeks. For a year after this he had a rather severe cough, but this was accompanied by but little expectoration, by no night-sweating, and by no loss of weight. He has always had a slight cough since this attack, but otherwise, he said, he has been as well as he was before. Six or seven weeks ago he found that his sight was failing, especially for near work, and during the past six weeks he tells us that it has gradually been becoming worse, but that some days he notices it more than others. He also tells us that since the attack of influenza he has been troubled with headaches. These at times are very bad, especially at night, and he states that he often goes to bed feeling all right, and is awakened during the night by the headache. This headache seems to be usually occipital, but sometimes it is frontal. He distinctly states that there has been no exacerbation of the headaches during the past six weeks,—that is to say, since his eyes became affected. The headaches also never cause vomiting.

State on Admission.—He is a man of under middle height, but fairly well proportioned, and of fair muscularity. There is a slight fulness under the lower eyelids, with a semicircular hollowing below, which seems to indicate that this fulness has at one time been more marked.

Alimentary System.—His mouth is rather dry; he is more thirsty than he used to be, and his tongue is somewhat coated. Beyond a slight tendency to constipation, there is no further abnormality. The liver and spleen are normal.

Circulatory System.—There are no subjective phenomena. Pulse is 90 per minute, regular in force and rate. The tension is high, the pulse wave is small, and the arterial walls are somewhat sclerosed and tortuous.

Heart.—Apex-beat can be felt in the 5th interspace, in the nipple line. Owing to the presence of emphysema, the percussion of the heart is a little difficult, but the left border can be made out distinctly to the left of the nipple line. On auscultation the first sound is reduplicated in all the areas, and the second sound is accentuated, and presents the "pump-valve" character in the aortic area.

Respiratory System.—He states that for the past two months he has noticed himself more short of breath than formerly. He has a slight cough with muco-purulent expectoration. His chest is distinctly emphysematous, but the physical signs of bronchitis are very slightly marked indeed; the breath sounds, somewhat feeble, all over show a slight inspiratory harshening. There are no crepitations anywhere.

Urinary System.—He states that for the past seven weeks he has had to get up two or three times at night to pass water, and that he has been passing a considerable quantity. Since his admission the quantity has varied between 50 and 90 ounces. It is light in colour, acid in reaction, and has a specific gravity of about 1010. It also contains a small quantity of albumen, ·2 per cent.; a trace of globulin, and a few hyaline casts. The amount of urine is about 300 grms. in the twenty-four hours.

Integumentary System.—The skin is usually rather dry, and he sweats very little. There is some œdema below the lower eyelids, as stated previously, and he says that this is most noticeable in the mornings, and that it disappears as the day wears on. He did not complain of œdema of the feet, but on careful examination a little pitting over the shin bones at the ankles could be detected.

Nervous System.—Except the headache and failure of eyesight, as previously mentioned, he has no abnormal sensations.

Examination of Eyes.—His left eye shows a scar over the lower part of the cornea. This, he says, was due to an accident with a chisel, which he sustained when he was 17 years of age. Ever since that time the sight in the left eye has been impaired, but this did not trouble him. In both eyes vision has been failing for the past six or seven weeks. He states that for about two weeks before his admission he has also noticed coloured rings around any object he looked at. Sometimes there were several rings of different colours; at other times stars appeared. He saw no flashes of light when in the dark, and he stated that he could see better by gaslight than by daylight. He also complains of severe pain above the eyes. This pain sometimes comes on suddenly, like lightning pains. These phenomena occur in connexion with both eyes, but specially with the right.

On examination the movements of the eyeballs were found unimpaired. The pupils are equal and regular in outline; they react readily and equally with accommodation, but scarcely at all to light. With the ophthalmoscope both optic discs appear blurred, but the vessels are not obscured. Numerous white patches of well-marked radiating white lines of albuminuric retinitis in both eyes. These changes, however, are more marked in the right.

Reflexes.—Superficial: Appear normal. *Deep:* Both knee and ankle jerks are well marked in both legs. No clonus can be elicited. *Organic:* All the organic reflexes are normal, with the exception of the bladder, for he tells us that sometimes he is suddenly seized with a desire to pass water, and can scarcely check it.

Cerebral and mental functions are normal, except that his sleep is not good, and is apt to be disturbed by dreaming.

The diagnosis which we have arrived at is that we have to deal with a case of primary contracting kidney, with the associated thickening of the arterial coats and hypertrophy and dilatation of the heart, and with its frequently concomitant emphysema. And now let us consider in detail the etiology and symptomatology of this complaint as manifested by our patient.

Etiology.—As you are all well aware, the etiology of contracting kidney is rather obscure, but foremost among the conditions which act as etiological factors are the three,—alcohol, lead poisoning, and gout. Now, in our patient you will have remarked there is no distinct history of any of these to be elicited. Of course gout is a very wide term, and in the sense in which it is used in connexion with primary contracting kidney, it covers a multitude of conditions; but when we try to elicit from our patient any history of dyspepsia or such like—of symptoms which might be classed as gouty—we find ourselves baffled, for up to the attack of influenza which he suffered from three years ago, he states that he has had no ailments whatsoever. To understand this matter better, however, let us first try to understand how such clearly-defined factors as alcohol and lead produce contracting kidney, and see if from this consideration we can get any light. One explanation of this is, that as the result of blood containing alcohol or lead circulating through the kidneys for months or years, a chronic irritation is set up, resulting in the infiltration of the interstitial tissue with leucocytes, and in the formation there of new fibrous tissue, which, contracting, leads to shrinking of the organ as a whole, with consequent pressure upon and obliteration of its tubules and glomeruli to a greater or less extent. This is chronic interstitial nephritis. Others look for an explanation of contracting kidney in "nothing but a simple degenerative atrophy of the renal parenchyma, and in a corresponding gradual increase of the interstitial connective tissue,"[1] —that is to say, they believe that, just as fibroid change takes place along certain tracts of the spinal cord when they are shut off from the influence of their trophic realm, so in the kidney when from one cause or other the nutritive power fails, a similar disappearance of the normal structural elements and an appearance of fibrous tissue will occur. Just as sclerotic changes in the spinal cord mean that the more complex and specialized elements, viz., nerve cells and nerve fibres, are from defective nutritive power no longer able to reproduce themselves in their more complex and specialized form, but disappear and are replaced by the less complex and less specialized fibrous tissue, so in the kidneys an exhausted nutritive power will mean more or less disappearance of the specialized elements, viz., the renal tubules and epithelium, and a proportionate increase in the less specialized, viz., the connective tissue. Between chronic inflammation on the one hand and degeneration on the other it is impossible to draw a line, but I think you will see that, looked at in this way, the effects will be the same. Now, it seems to me that to look upon primary contracting kidney as a degenerative rather than an inflammatory process is to take a most reasonable view.

It will explain the recurrence of the senile kidney—the contracted granular kidney which is found in old people, as being the result of slow failure of nutritive power—and it will account for the contracting kidney of the alcoholic or the lead worker, as being, as it were, a senile kidney brought on prematurely as the result of the overwork which the efforts to withstand the effect of the alcohol or lead have thrown upon it. It will also, as readily as any other theory, explain why the gouty or the rheumatic individual—or one who is dyspeptic as the result of long-continued over-eating, overworking, or mental worry—should be liable to suffer from contracting kidney. In all these we know that faulty metabolism in the organs or tissues will lead to the presence of products more or less irritating in the blood and in the kidneys, and that this, acting like alcohol or lead, will not fail to produce a premature wearing-out or senility of the renal parenchyma.

Further, just as we know that the duration of life of an individual depends not only upon the wearing out to which he is subjected, but upon the amount of vitality with which he is endowed at birth, or, to be more correct, at conception, so with the kidneys. The innate vital power of these organs varies much in different individuals. Wear and tear which in one will be successfully borne for 80 or 90 years, will in another cause what may be termed senile kidneys and death at 35 or 40. Contracting kidney is markedly hereditary.

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[1] Strumpell, *Text-Book of Medicine*, p. 856.

If we now apply these considerations to our patient, who at the age of 52 presents definite indications of contracting kidney, all that we can say is—(1), that from the fact that his father died at the age of 42, he may possibly, as regards his kidneys, be hereditarily rather below par; (2), that his attack of influenza three years ago may also have aided in the using up of their nutritive energy; (3), that he may possibly have been taking too much alcohol, and that, as the result of faulty dieting, exposure, etc., some morbid material may have been circulating through his kidneys, and prematurely have used up their trophic power.

One thing seems certain, and that is, that there is no evidence of any parenchymatous nephritis, which might, as it often does, set the fibroid change in action. This is a case of *primary* contracting kidney.

Symptomatology.—Notice here that what brought our patient to the Infirmary was impaired eyesight. This exemplifies what you will often find, viz., that this disease is frequently first diagnosed by the ophthalmic surgeon. But this exemplifies also something even more important, and that is, that the disease in its earlier, and therefore more remediable, stages is to be recognised by objective signs rather than by subjective symptoms. The main explanation of this is that the impaired function of the kidneys is compensated for by extra work in other tissues and organs, notably in the circulatory system, and that, therefore, with practically entire absence of symptoms, we may have, if we remember to look for them, distinct evidence of the existence of the disease in the presence of cardiac and vascular changes. This, however, will be best understood by discussing the various systems in detail.

Circulatory System.—Here the only symptoms of derangement are that, on inquiry, we find that he has noticed himself for the past few months more easily put out of breath than formerly. He has no giddiness or other evidence of weak cerebral circulation, and no palpitation nor cardiac pain. On examination, however, we find his heart enlarged, a reduplicated first sound heard over the ventricles, and a loud "pump-valve" second sound, heard loudest in the aortic arch.

The cause of the reduplicated first sound and of the pump-valve second sound I believe to be the abnormally high pressure in the left ventricle and aorta. Normally, as you know, the pressure in the left heart is supposed to be three times greater than that in the right; but in our patient, although we believe the right heart to be somewhat dilated and hypertrophied as the result of the emphysema, we believe that the left heart is proportionately still more so. The extra tension in its cavity, therefore, is the cause of the reduplication of the first sound, because it induces asynchronism in the systolic contraction, and in the sudden tension of the valve cusps and cordæ tendiniæ of the two ventricles. The extra tension is also the cause of the pump-valve aortic second sound, because of the greater pressure in and probably also dilatation of that tube. The high arterial tension is shown very well by sphygmographic tracing; and with the sphygmometer the pressure on his admission was found to be about 8.

But, now, what is the cause of the hypertrophied heart, the high tension, and the rigidity of the vessels? On this subject a great many theories have been brought forward. Johnson ascribed it to the morbid material in the blood stimulating the vasomotor nerves, and so exercising a "stop-cock" action on the small vessels, the result of which would be to induce heightened blood-pressure, hypertrophied heart, and thickened vessels. Traube's theory, as modified by Cohnheim, is that in the condition of renal inadequacy there is a hindrance to the circulation through the kidney, and that this will react and cause increased blood-pressure in the entire arterial system, and so induce hypertrophied heart, etc. But the view which I think will occur first to you is a simpler one. It is, that the kidneys being inadequate, noxious materials are retained in the blood, and that thus the give-and-take interaction between blood and tissue is disturbed. The tissues will thus less readily assimilate their nutritive material, and the blood will therefore require more force to drive it on. Thus can be explained the hypertrophy of the heart. The thickened vessels might be explained in the view that the extra pressure brought about by the hypertrophied heart entails strengthening of the arterial walls. Further, we can suppose that, just as in the heart the compensatory hypertrophy is apt to be followed in time by fibroid or fatty change in its wall, so in the vessels the hypertrophied elastic or muscular coat is apt in time to show degenerative fibroid or sclerotic changes. But note that, in whatever way induced, this hypertrophy of the heart and high arterial tension is compensatory, and consequently salutary. As cell after cell of renal epithelium is destroyed, as patch after patch of secreting tissue becomes fibrosed, and as, consequently, the renal inadequacy becomes more and more marked, all this is more and more compensated for by the forcing of an extra quantity of blood through the kidneys, and so long as the heart is equal to the extra work, and the vessels to the extra strain, no trouble is caused and no symptoms are induced. Sooner or later, however, the strain begins to wear out the machinery somewhere, but this will be better referred to later on.

Another symptom which comes for consideration under the circulatory system is the anæmia. This is a common symptom in contracting kidney, but it is not present in our patient; for in him the corpuscles were found to be close on the 5,000,000 and the hæmoglobin about 60 per cent. When we reflect that one cause of the anæmia so common in these cases is the loss of albumen by the urine, and that another is the disturbed appetite and digestion, we can understand that our patient should not present anæmia; for the amount of albumen in his urine is very small, and his appetite and digestion are fairly good.

Respiratory System.—A prominent symptom here is dyspnœa on exertion, and the usual causes of this dyspnœa are weakened action of the heart, and probably also anæmia. Among other causes is irritability of the nerve centres; and in our patient the slight dyspnœa on exertion which he complained of may possibly be ascribed to this, for, as you have seen, his ankle and knee jerks are specially well marked. But a further cause is doubtless the emphysema, which is specially common in cases of contracting kidney, and which is markedly present in our patient. The slight cough which he occasionally suffers from will be due to the emphysema inducing from time to time attacks of bronchial catarrh.

Digestive System.—In our patient the dyspeptic symptoms, which are so often troublesome in contracting kidney, are as yet markedly absent. His tongue is perhaps slightly furred, but all he complained of was a rather dry mouth, increased thirst, and constipation, all of which can be explained by the large quantity of urine which he is passing.

Urinary System.—The urine presents, as stated, the characters of contracting kidney: it is large in quantity, pale in colour, low in specific gravity, and it presents albumen and casts. The large quantity is, of course, compensatory, and persists in these cases till a failing heart lowers the arterial tension and increases the venous. With the large quantity of urine the amount of urea per ounce is below the average, although the patient may be excreting the normal amount in the twenty-four hours. In this patient the amount of urea in the twenty-four hours is about 300 grns.

In such cases, further, the flow of urine per hour at night is specially great, hence increased frequency of micturition at night is often an important symptom. In cases of primary contracting kidney the amount of albumen is usually small, and it is important to remember that it may be absent altogether from beginning to end. In this patient it was on his admission about ·2 per cent., but it has completely disappeared since. Casts are always to be looked for, and corresponding with the atrophied and degenerated condition of the renal epithelium they are hyaline or granular in character.

Integumentary System.—His skin is dry, and he has noticed that he has not been sweating for a time. As regards dropsy, it is slight, corresponding with the large quantity of urine which he has been passing. As already stated, he has himself observed only a little puffiness of his eyes in the mornings on waking, and we on his admission observed as well a very slight tendency to pitting about his shins and ankles. An interesting question crops up here as to why in such cases the dropsy is observed only about the eyes and only in the mornings; and this latter phenomena is all the more interesting when it is remembered that, showing itself in the mornings, it must have been occurring during the night hours, when the flow of urine per hour is apt to be specially great. This point, however, I have referred to in a previous lecture.[1]

Nervous System.—As you all know, symptoms referable to the nervous system are very common in contracting kidney. This can be understood when we remember that any impurity in the blood must readily affect the sensitive nervous tissues. Hence result headaches, neuralgias, sleeplessness, Cheyne-Stokes breathing, etc. Further, we have to remember that alterations in the blood supply —either too high pressure when the compensation is complete, or too low when it fails—will affect brain metabolism, and cause giddiness, tendency to faintness, etc. In our patient only headaches and disturbed sleep are complained of; but it is of interest to notice that his ankle and knee jerks are distinctly increased, as indicating that his nerve centres are rather more irritable than normal.

Again, you know that, as the result of the same cause, the mental functions are apt to be affected,—moroseness and irritability of temper are common associates of this condition of renal inadequacy. Our patient, happily, appears to be unaffected in this way; but one sometimes sees distinct mental impairment, and maniacal attacks supervene in such cases, specially towards the termination.

[I cannot refrain here from alluding to a patient, L., who was in Ward 30 in December last. This man had been a soldier in India, and some of you will remember him from the fact of the marks shown on his left breast, viz., two double D.'s and a B. C. Though quite quiet and orderly in the ward, he had evidently been, to use a vulgar term, a bad lot in the army; and you will remember we believed we had an explanation of this in the fact that he had had an attack of acute nephritis, at the age of 17 years, before he had enlisted; and that all his symptoms evidenced the existence of secondary contracting kidney, dating from that time. The reading of his case at the clinique forcibly recalled to my mind Rudyard Kipling's story *In the Matter of a Private.* Kipling here describes how a certain private Simmons passes into an attack of male hysteria, how he shoots his comrade Losson and also his major, and how he keeps shooting right and left in the barrack square till he is at length overpowered and taken. He is, of course, hanged in hollow square of the regiment; and then Kipling tells us that the colonel says it is drink, and the chaplain says that it is the devil, but that no one thinks that it is hysteria. Well, in our patient, L., I have no doubt that his misdoings in his regiment would be similarly ascribed to drink and to the devil, but I have as little doubt that they were mainly due to renal inadequacy.]

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[1] "On a Case of Renal and Cardiac Disease," Dec. 1892.

But a most important symptom which our patient presents is the albuminuric retinitis. This, or rather the disorder of vision which it entailed, was indeed what brought him to hospital. Albuminuric retinitis is said to occur in from 10 to 20 per cent. of the cases of contracting kidney, but as regards its cause we have little precise knowledge. We know that it occurs in chronic cases, and often when the general symptoms of kidney disease are slight, hence it is probably due to some morbid material in the blood. It does not seem to be so much due to the consequent cardiac and vascular changes, because we know that hypertrophied heart and thickened vessels existing without albuminuria do not induce it. Further, in cases of albuminuric retinitis the prognosis is, as we shall see, very unfavourable, hence we may conclude that it is, at any rate, associated with some defective trophic power on the part of the nerve tissues.

Prognosis.—In contracting kidney the prognosis is always bad. The disease is progressive, but with care cases may last and work may be done often for many years. Sooner or later, however, changes occur—

1. Cardiac compensation may fail, and death occurs with symptoms of backward pressure, lung congestion, diminution of the quantity of urine, dropsy, etc.
2. Cardiac compensation remains good, but a vessel gives way in the brain, and the patient dies from cerebral hæmorrhage.
3. Pleurisy, pneumonia, peritonitis, or acute nephritis may occur.
4. Uræmia may occur.
5. The fatal issue may result from sudden œdema of the glottis or of the lung, or pulmonary apoplexy.

In our patient the favourable points are that the specific gravity of the urine is fairly good, and that the heart shows no marked sign of failing compensation, but the albuminuric retinitis makes the prognosis grave. It has been stated again and again that the duration of life in such cases is not over two years.

Treatment.—As regards diet, non-nitrogenous foods seem to be indicated in those cases, but you have to remember that if the patient is weakly, and more especially if there is any tendency to anæmia, some nitrogenous food should be allowed. The patient's feelings are often a good guide in this matter. If he feels an appetite for such, and if he can digest them, the probability is that good will result.

As regards regimen, care should be taken to keep the skin in proper working order. Flannel should be worn, and occasional baths should be employed,—hot-water or vapour, if Turkish seem too risky. For the bowels, laxatives have usually to be employed. In addition, articles of food which have an effect in this way may be selected, such as fruit, etc. You all know the risks of constipation. Patients with contracting kidney often succumb to cerebral hæmorrhage as the result of straining in the W.C.

As regards drugs, a combination of the bromide and iodide of potassium often does good, and for the anæmia, iron, if it can be borne, may be employed. Our patient is getting the bromide and iodide, and we found his general condition and headaches relieved by occasional doses of nitro-glycerine, and by occasional hot-air baths. His headaches have also been relieved by blistering behind the ears.

III.—MORISON LECTURES ON INSANITY.

By John Batty Tuke, M.D., F.R.C.P.E.

(*Delivered before the Royal College of Physicians of Edinburgh.*)

(*Continued from page* 780.)

Lecture III.

In the last lecture I directed your attention to the fact that the naked-eye indications of diseased action in the brains of those dying insane are, as a rule, confined to an area corresponding in extent to that of the two hands placed side by side on the vertex. At the base the evidence of morbid change is, for the most part, absent: the focus of diseased action is the line of the Pacchionian villi and the Rolandic area; and its indications fade away anteriorly, posteriorly, and laterally, till they merge into the unaffected pia of the more dependent and inferior regions. It may be accepted as a fact that the condition of the pia, as viewed by the naked eye, affords a fair index of the degree of *active* morbid action going on in the subjacent convolutions; microscopic examination confirms the statement. How is it, then, that the areas which we are taught to believe form, in the words of Ferrier, "the substratum of those psychical processes which lie at the foundation of the higher intellectual operations,"[1] and the aberration of whose functions is the prominent symptom of the disease we are considering, present in most cases slight visible departures from normality of the membrane; in a certain proportion, none. This question is difficult of solution, but I think the attempt to work it out may be productive of points of interest bearing on the general position.

The focus of diseased action—*i.e.*, the ascending frontal and parietal convolutions, and the neighbouring parts of the superior and middle frontal gyri—sends downwards from certain of its zones of cells (according to Ramon y Cajal, the pyramids) axis-cylinders which are in connection with fibres forming the pyramidal tract, which can be traced through the inner capsule to the crusta. It is unnecessary to remind you of the connections of this tract with the skeletal muscles, and with the cranial nerves for the movements of the eyes, mouth, face, tongue, pharynx, and larynx, which have been proved by direct stimulation, and by the observation of downward degenerations. I do not ask you to accept without reserve the view that the centripetal or terminal fibres of Ramon are the afferent paths. Ramon does not affirm the proposition; he merely asks, "Is it possible that such fibres represent the cerebral termination of sensory nerves, or at least that of axis-cylinders proceeding from cells dovetailed with the terminal branches of those nerves? This seems probable, but cannot be certainly ascertained." However this may be, no one can doubt that some such executive afferent apparatus exists.

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[1] *The Functions of the Brain*, p. 147.

In this connection I wish to draw your attention to an interesting and suggestive observation made by Groves.[1] His experiments were directed to the effect of chemical stimulation on motor nerves. In summarising his results he states (*inter alia*), that "the present state of our knowledge in regard to chemical stimuli leads to the conclusion that the nerve impulse which connects the causal stimulus with the resulting contraction is of quite a different nature in the cases of chemical and electrical stimuli;" and that "afferent nerves are almost unaffected by chemical stimuli." This author dealt only with peripheral nerves of the extremities and the vagus, and we can only use his conclusions by analogy: but if it is admitted that brain exudates exercise an influence on cell or fibre, it is evident much interest attaches to the observations. If the afferent apparatus is, and the efferent is not, affected by its immediate surroundings, serious modifications of function would appear to be inevitable.

Every discovery appears to bring to light important facts bearing on the anatomical association of adjacent and remote parts of the brain. The *rete mirabile* of cell and process fibrils is almost inconceivable. We have the collateral fibres from axis-cylinders and terminals, the arborisations of the protoplasmic processes of the pyramidal layers, the ascending processes of the cells of the fourth layer, the collaterals of callosal, projection, and association fibres, and the ramifications of the large white fibres. Intricate as this network is in all regions of the cortex, it reaches its maximum in the superficial layer. Let it be remembered, also, that the association system of fibres of the white matter forms the great mass of the *centrum ovale*,—a suggestive fact not sufficiently impressed on the student in anatomical and physiological works; that the axis-cylinders with which they are connected bifurcate, one of them passing back into the cortex, and the other going to the corpus callosum, while the true association fibres send off at right angles numerous ascending collaterals. Thus by every nervous structure, and possibly by the special action of the fourth layer, association is maintained between cell and cell, between cell and fibre, between convolution and convolution, and between hemisphere and hemisphere.

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[1] "Chemical Stimulation of Nerves," *Journal of Physiology*, vol. xiv. p. 231.

There are the very strongest reasons for believing that kinæsthesis (transmutation of sensory stimulus into motion) occurs in the pyramidal cells of the Rolandic area. This cannot, however, be the only transmutation of energy performed in this area; important and essential impulses must be transmitted from the pyramids to cells of other regions, where they are conserved or released according to circumstances. Let me add the concluding words of the paragraph just quoted from Ferrier's work:—"There are centres for special forms of sensation and ideation, and centres for special motor activities and acquisitions, in response to, and in association with, the activity of sensory centres; and these in their respective cohesions, actions, and interactions, form the substrata of mental operations in all their aspects and in all their range."[1]

The processes by which a sensation (using the term in its physiological sense without any psychological connotation) becomes transformed into (let us say) a sentiment, are outside physiological theory. Without prejudice to the opinion that nerve force is a physical force, it may be pointed out that its transformation stands on the same platform as the doctrine of the transformation of physical forces: both can be demonstrated experimentally, but the condition of matter incident on the processes is in either case subject of speculation.

The organs of the Rolandic area are probably not the only transmutators of energy, but it is evident that their action must have a wide-spreading influence on that of other regions. This area is the most active region of the brain, and, therefore, the most liable to accident. Given that its cells are affected by any evil influence (in the case we are considering, by the influence of over-exertion), we have a right to look to it for the effects of impaired transmutation. So far as we can at present judge, the pyramids are the first cells to show morbid changes. In almost all subjects we find evidence of work in these organs; but the evidence of work due to functional activity increases proportionately with age and cause of death. I have examined the pyramidal cells of many animals and many human beings. In the former the indications of waste due to exercise of function, as manifested by pigmentation, are slight, only such as we may assume are physiological in amount. In the young man or woman dying of acute disease, the same holds true; as we take cases more advanced in life they increase, but not beyond a certain limit; in those taken from subjects who have died after long, painful, or wearing disease, who have laboured under delirium or other head affections, or who have died insane, the indications of waste and of structural change become more and more pronounced, and the increase occurs in the order in which the causes of death have just been stated. In the large majority of cases in which morbid mental symptoms have presented themselves, and in which excessive pigmentation has been observed, the body of the cell undergoes changes in form, and its protoplasm, judging from the manner in which it takes on stains, also becomes changed in quality. The observations of Miles on the effects of traumatism on the convolutions[1] support my view ; and it is of great interest to note that in two human cases related by him this appearance was found to have occurred within fifty and twenty-five hours respectively of the infliction of the injury. The mere prominence of these cells by reason of their size does not in any way account for the observation ; for those of other layers have been carefully examined, and, as regards period and degree of implication, have not been noticed undergoing degeneration in the same rapid and intense manner as the giant cells. Certainly, in the cases which I have examined which had succumbed earliest after the incidence of insanity, none of the cells of the anterior two-thirds of the frontal convolutions and of the posterior occipital gyri were so deeply implicated as those of the Rolandic area ; they were not nearly so deeply pigmented, and their degeneration was of the granular character.

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[1] *The Functions of the Brain*, p. 147.

Given a zone of important cells undergoing stimulation beyond the physiological limit, we may expect effects to be transmitted to remote organs exercising different functions, by means of the intimate anatomical connections which have been demonstrated : and it does not follow that these effects must be of the same nature as those acting on the zone of cells primarily affected. In the convolutions anterior to the Rolandic area the effects of sub-inflammatory action are much less well marked in insane subjects than at the vertex ; they are often absent, and the pigmentation of cells is generally slight. In this region the cell degeneration is of a granular character, which may more or less rapidly go on to destruction and absorption. This, to my mind, is indicative of impaired nourishment rather than of active morbid action ; of interruption of trophesial function, which depends on the maintenance of the integrity of cell connection. To this destruction of cell material and of the implication of nerve fibre, presently to be spoken of, must be ascribed the general shrinkage of the anterior lobes so often noted in the insane. To illustrate its frequency I quote from Bevan Lewis :—“The fronto-parietal segment of the hemispheres enjoys least immunity from the atrophy incident on insanity, and we find atrophy confined to the frontal lobes in a large number of cases—in fact, in the proportion of three-fourths to one-fourth respectively."[1] In the course of almost every case of idiopathic insanity—*i.e.*, insanity due to over-exertion of the brain—we have a fairly well-marked prodromal period indicating the diseased balance between nutrition and function in the kinæsthetic area. As the impaired function of the cells of this area makes itself felt on the cells of ideational centres, whether by lessened or increased conduction of energy or by modification of their nutritive influences, we have reduction of their structural integrity, and perversion of psychical acts. As every case runs its course to recovery or to permanent insanity, we have a period of mental and physical torpor, which we speak of as dementia. On the rapid removal or non-removal of the causes of implication of the cells of the Rolandic area depends the issue of the case—recovery or prefrontal atrophy.

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[1] *Royal College of Physicians of Edinburgh Laboratory Reports*, vol. iv. pp. 181-3.

The comparatively slight milkiness of the frontal pia as contrasted with that of the Rolandic area is dependent, not on underlying morbid action, but on the damming back of the lymphatic stream, which, running upwards, is arrested at the vertex in the line of the Pacchionian villi, and the *débouchement* of the great veins. We all know that this appearance presents itself in most subjects, sane or insane, and that its intensity increases with age. But, except in the case of inebriates, it is never found so well marked as in the insane, and in their case it is prominently indicated at a much earlier period of life than in the sane. Its first appearance is as a fine milky line along the course of the pial veins, and is due to the deposit of waste and plastic exudates. As these accumulate and diffuse, the membrane becomes thick, tough, and on section is found to consist of a mass of material which looks like an immense increase of the normal trabeculæ. Through this thickened structure the flow is slow, and the waste material which would have been disposed of were the channels patent is deposited in a certain circumscribed area. It is probable that the fluid is filtered in the thickened pia, and that as it reaches the larger cisterns it is so slightly loaded as to pass freely into the wide space in the spinal canal. What anatomical limitation governs this diffusion? It is an interesting fact that, except at the vertex, the widest stretch of the milky area corresponds with the distribution of the branches of the middle cerebral artery; the rest of the arachno-pia (except in such acute conditions as general paralysis) being for the most part clean. Is it that the demand for blood by the active part of the organ leaves after it the signs of work and the evidence of waste of tissue?

But this suggestion does not meet the fact that at the vertex on either side of the sinus, and especially in the neighbourhood of the Pacchionian villi, the grossest thickening and opacity of the membrane is most frequently and markedly present. This area is generally supplied by the anterior cerebral artery;[1] on the mesial aspect we have no sign of disease; why, then, in this region? In the first place, it is the area of *débouchement* of the great veins; and, secondly, it seems highly probable that the Pacchionian villi perform a much more active lymphatic function than they generally get credit for. Should extra work be laid on them by failure of the other lymphatic system they develop in size; notwithstanding which, not being able to meet the strain, a proportion of their plastic contents escapes, and affects contiguous parts.

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[1] *Loc. cit.*, p. 457.

As yet I have only alluded to the effects of unphysiological exudates on vessels and cells; their effects on nerve fibres and cell processes, although they may be of secondary origin, are still of very considerable importance. It is well known that, so far as experiment can show, it is impossible to tire a nerve fibre, and that it will continue to transmit impulses under very unfavourable conditions. Also we know that in the brains of old-standing cases of insanity marked departures from normality are found in this tissue, and that they are especially distinct in the frontal lobes. From my point of view one of the most important of Miles's observations is that we have evidence that changes in nerve fibre, and probably in the collaterals, and in other processes of cells, can be very rapidly produced, and are indicated by the presence of colloid bodies and so-called "miliary sclerosis." The latter lesion was described by me many years ago, along with Prof. Rutherford, and I am mainly to blame for the error enunciated as to its genesis and name. Bevan Lewis convinced me that colloid bodies and so-called "miliary sclerosis" were aggregations of myelin derived from the investment of nerve fibre. I found the former in the brains of birds within ten days after the receipt of injury; but Miles discovered it in the case of a boy who died fourteen hours after an accident, and in a man who survived his injuries only eighteen hours.[2] In animals he found it very rapidly produced after injury to the head. Miliary sclerosis is merely the result of the confluence of larger droplets of myelin. I am, of course, very far from saying that these evidences of nerve lesion are produced in anything like the same short space of time in the brains of insane persons; these observations are only adduced to show that they may be present in cases much earlier than could be inferred from any extant statement. In Miles's cases these bodies were doubtless produced by bruise and rupture of the fibres. Bevan Lewis holds that they are "accidents occurring in the course of a sub-inflammatory or degenerative change in the medullated nerve tracts."[3] It is quite possible to conceive that in the earlier stages of the condition the droplets of myelin are very small, and that they do not coalesce till lacunæ are formed by the further action of disease. We are all aware of the effects of certain poisons, such as the primary infective agent of typhoid fever, tubercle, beriberi, and diphtheria, and of alcohol, on peripheral nerves. The medullary substance is first affected, and becomes attenuated; this is followed by interruption of the axis-cylinder, and, as a consequence, degeneration of the nerve throughout its course ensues.[1] It is an open question whether these changes are of central or peripheral origin; for my present purpose it is unnecessary to debate the matter. It is enough to say that the probability is that the brain fibres and collaterals are structurally impaired by the effects of poisonous exudates on the cells, and that thus a serious interruption of connections is effected.

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[1] *Vide Quain's Anatomy,* tenth edition, 1893, vol. iii. part 1, p. 196.

[2] Miles, *loc. cit.*

[3] *Loc. cit.,* p. 264.

I have sketched, roughly enough it must be admitted, the general structure of a convolution, certain physiological considerations bearing on its method of conduction of impulses, and certain pathological conditions which may be productive of temporary or permanent perversion of one or more of its functions. Many interesting and important points have been omitted, as time would not permit of their being taken up in detail; but I submit enough evidence has been adduced to illustrate the existence of an apparatus of the most complex kind. What strikes one forcibly as one works at the subject is, if on the maintenance of this most delicate and intricate machinery in its entirety depends the healthy working of the body and the normal exercise of the mental functions, how is it that pathological and other accidents do not occur more frequently than they do? To compare the terminal fibrillæ of an axis-cylinder with a filament of a spider's web would be to compare a silken thread to a hawser. There is no organ of the body possessing such immense intricacy of arrangement as a convolution of the brain; the structure of the spinal cord is, in comparison, simplicity itself; that of the cerebellum or of the retina commonplace. It is impossible to find terms or to cite comparisons to express the feeling produced by study of its delicacy and complexity. It is preserved from rough accident by its rigid bony envelope, which has till of late years been regarded as "a practically closed sac." Were it so, it would prove a greater source of danger than of protection: a fit of coughing or of sneezing might under such circumstances prove fatal. If we assume that the average compressibility of brain matter is at all comparable with that of water, were it confined in a rigid chamber absolutely filled, the addition of a $\frac{22}{1000}$ part to its volume would produce a pressure of one atmosphere, and an additional atmosphere would crush the organ into a shapeless mass. The statement of the physical fact enables us all the better to recognise that the coherence and continuity of this large and delicate organ depends on the maintenance of the normal ebb and flow of the cerebro-spinal fluid in which it is suspended. The constant variation of the quantity of this fluid is admirably illustrated by the experiments of Dean,[1] which also enable us to get a clearer conception of its action in preserving the unity of the whole encephale. The cerebro-spinal fluid also receives from the lymphatic system the products of waste, and under abnormal conditions the products of diseased action. Any interference, therefore, with its flow must act detrimentally; for, be it remembered, the brain obtains no vicarious assistance from other systems,—it must do its own work, and must rid itself of all effete matter.

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[1] *Vide* "Multiple Sclerosis," Sidney Martin, *Journal of Physiology*, vol. i., No. 3.

Although Falkenheim and Naunyn[2] have shown that increase of blood pressure does not increase the amount of secretion of cerebro-spinal fluid, Dean observes that the cerebro-spinal fluid pressure increases considerably with increase of blood pressure; and he naturally infers that the same occurs under such circumstances as excessive secretion or diminished absorption of the fluid, or the pouring out of inflammatory exudation.[3] Further, he shows that local pressure produces œdema of contiguous parts, and that in the area submitted to pressure degeneration of cells takes place. I think that, given functional hyperæmia passing into congestion and subacute inflammation, we have every reason to believe that the lymphatic flow is interfered with, and that the brain must suffer in respect of functional activity and solutions of continuity of its structure. No one reading Bevan Lewis's chapters on Pathology can fail to be struck by the frequent reference to inflammatory changes affecting bone, membranes, and nerve fibres. Let us take his remarks on the pia:—"The pia mater is abnormally thickened in fully 48 per cent. of those dying insane, partly from fibrinous exudates which have organised, partly from plastic lymph, and often from an œdematous swollen condition of the conjoined soft membranes."[4] In like manner he refers changes in the skull and dura to inflammation, and as we have seen, he speaks of colloid bodies and "miliary sclerosis" as accidents occurring in the course of sub-inflammatory action. I prefer to take this book because it is the most authoritative work on the subject in our language, notwithstanding that its author expresses no opinion as to the existence of sub-inflammatory changes in the early stages of "acute mania" and "acute melancholia." He generally speaks of the changes spoken of as being the result of old-standing inflammation: the meaning of which I infer to be that it occurred at an early stage. Certainly the 48 per cent. included general paralytics; but that leaves a fair margin for cases of terminative dementia due to other causes of insanity. But we have direct evidence in the presence of distended and congested vessels, leucocytes in the perivascular canals, and exudation, of the presence of inflammatory action in all cases which had been the subjects of acute mania or acute melancholia.

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[1] "Cerebro-Spinal Pressure," W. C. Dean, *Journal of Pathology*, vol. i., No. 1.

[2] *Archiv für Exper. Pathol.*, 1887.

[3] *Loc. cit.*

[4] *Loc. cit.*

(*To be continued.*)

IV.—ON INTRA-CRANIAL SURGERY.

By Professor **Annandale**, M.D., F.R.C.S. Eng. & Ed.

(*Read before the Medico-Chirurgical Society of Edinburgh on 7th February* 1894.)

When I was honoured by being asked to open the discussion on Intra-cranial Surgery I accepted the invitation with the understanding that the discussion was to be practical, and as much as possible upon the results of individual experience.

The subject is a wide one, and I feel sure that I shall have the sympathy of my audience in my endeavour to be concise. Feeling the importance of arrangement, certain heads were submitted to the President and Council, who were good enough to approve of them and to make one or two slight additions.

Intra-cranial surgery has made marked advances in recent years. Antiseptic surgery has rendered operative procedures upon the skull and its contents comparatively safe. Brain localization has made diagnosis more accurate, and electric tests have still further assisted the surgeon in confirming the correctness of his localization. We have, however, still much to learn in regard to intra-cranial affections and their treatment, and such knowledge can be acquired only by continued research and observations—physiological, pathological, and clinical—and also by carefully considered and carefully executed exploratory operations. It is now nineteen years since I strongly advocated, in a paper published in the *Edinburgh Medical Journal* for 1875, "Antiseptic Incisions as an Aid to Surgical Diagnosis," and now this practice is acknowledged to be of the greatest value in obscure conditions affecting many important regions and cavities of the body. The cavity of the cranium has not as yet been so freely treated upon this principle as other cavities, but I believe that in the future, surgeons will explore this cavity more frequently.

I.—*For Exploratory or Diagnostic Purposes.*

It has usually been a recognised principle that the cranial cavity should not be opened into by the surgeon unless the history or special symptoms of the case pointed to some condition which experience has shown may be remediable by such procedure, but I am of opinion that in certain cases the surgeon is justified in departing from this principle, and operating when such guides do not exist. I would specially refer to—

1. Cases presenting symptoms of general brain pressure unrelieved by ordinary treatment, and of doubtful origin. More than twenty years ago I opened the skull of a patient in Professor G. Stewart's wards in the Old Infirmary. The patient's symptoms were those of general brain pressure, and although no special condition was found, temporary relief was marked. Another case of this kind was operated upon by Sir Joseph Lister in the same wards with success.

2. Cases in which the symptoms are constant and severe pain in the head, unrelieved by any treatment, and difficult to distinguish from that depending upon intra-cranial causes. In some of these cases there may be the history of an injury or of specific disease, but no external manifestations can be detected. In illustration I give brief notes of the case of J. A., æt. 55. Twelve years before he consulted me he received a blow upon the top of his head, and ever since, but more particularly for the last two years, he had suffered from intense headache, referred to the upper and back part of his head. No specific history could be obtained, and there were no external conditions to be detected. He had tried many remedies, internal and external, without any relief, and was depressed and melancholic. Upon the 18th of February 1889 I removed a circle of bone from the upper and posterior aspect of the right parietal bone, the seat of injury, by means of a one-inch diameter trephine. No abnormal condition was found, although I incised the dura mater. He made an excellent recovery, and was dismissed perfectly cured upon the 6th of March. Although no advocate of indiscriminate operations, I am of opinion that surgical interference should be carried out in any doubtful cases under these heads, when they have resisted careful medical treatment. If the skull is opened with proper antiseptic precautions, the operation itself is not attended with much risk to life. If no abnormal condition is found after removing the circle of bone, the dura mater should be carefully incised, and the brain substance also if the membrane is found healthy. Such exploratory operations cannot always be successful, but as the condition of the patient is, as a rule, hopeless, such an operation may give a chance of affording relief.

II.—*Intra-cranial Inflammation and Suppuration.*

(*a.*) *Traumatic.*—In any case of injury to the skull, with or without a fracture of the bone, inflammation and suppuration may result. Intra-cranial suppuration following scalp wounds or bruises without fracture is now not common, principally owing to the absence of septic conditions; but in my early surgical experience, before the days of antiseptics, it was not uncommon to find such injury followed by inflammation and suppuration in connexion with the bone and its diploe, and intra-cranial suppuration. In illustration I give a brief note of the case of B. H., æt. 11, who, in May 1889, received a wound on the scalp over the upper and left side of the head at a point corresponding to the motor area of the arm. There was no fracture, but suppuration took place in the soft textures of the scalp, and this was shortly after followed by severe epileptic fits which occurred many times daily, and which commenced by severe twitching in the right arm. Upon the 24th of June the wound was enlarged and a necrosed portion of the outer table of the skull was exposed; the trephine was applied so as to include the necrosed portion, and a circle of bone removed. Immediately a gush of pus took place, the abscess being situated between the dura mater and the bone. The result was a complete success, and the patient, when seen three years after, had had no return of the fits.

In any case of injury to the skull the inflammation may be diffuse or circumscribed. In the former the symptoms will usually be those of general brain pressure or irritation; in the latter there may or may not be localized symptoms, which will be a guide to the position of the abscess.

When localized symptoms exist, the surgeon should have no hesitation in trephining accordingly; but when the symptoms are only general, the hope of relief following operation cannot be so good. Still, opening the skull may in some such cases give relief; and when considering the propriety of operative interference the surgeon should study the nature of the accident, and keep in view the fact that the suppuration may in some instances take place at a point opposite to the seat of the injury. My experience in connexion with intra-cranial abscesses leads me to express the opinion that in all cases in which the symptoms are severe and persistent it is the duty of the surgeon to explore as thoroughly as possible both cerebrum and cerebellum, even if repeated openings require to be made in the cranial walls.

(*b.*) *Middle-Ear Disease.*—As Dr M'Bride is to speak from his experience upon this cause of intra-cranial suppuration, I will content myself with emphasizing, as a result of my own experience, the following opinions:—

1. Patients suffering from chronic suppuration of the ear are liable to certain risks.

2. That these risks consist of suppuration, which may be associated with necrosis, may involve the mastoid cells, may lead to accumulations of pus in the mastoid antrum, to intra-cranial inflammation and suppuration, and occasionally to thrombosis of the lateral or other sinus and the internal jugular vein.

3. That when intra-cranial suppuration takes place it may be

diffuse or circumscribed, may be external to the dura mater, or may occur—1*st*, in the temporo-sphenoidal lobe (most common); 2*nd*, in the cerebellum; 3*rd*, more rarely in the opposite hemisphere or other lobes, and sometimes in the pons or crus.

4. That localized brain symptoms are not usually present, so that the diagnosis must depend upon the history of the case and *general* brain and other symptoms.

5. That in all such cases it is important that free exit be given to pus, and that the exact operative procedure will depend upon the symptoms. If there are signs of involvement of the mastoid cells or antrum, these should be freely opened into; and if there are any brain symptoms, the skull should at once be opened, and the cerebrum, and if necessary the cerebellum, carefully explored for suppuration, always keeping in view the fact that the exact seat of the abscess is not easily determined without such exploration.

In illustration of a cerebellar abscess I give a note of the following case:—R. W., æt. 15, admitted July 8th, 1887, with a history of suppurating middle-ear disease for several years. When admitted he had general brain symptoms, but no localized ones. The skull was opened so as to expose the temporo-sphenoidal lobe. No suppuration was found after careful exploration by fine trocar and canula. Patient died suddenly the same evening, and the post-mortem revealed an abscess in the cerebellum.

In illustration of the risk in delaying the operation I record the case of A. B., æt. 36, admitted October 3rd, 1890. He had suffered for many years from chronic suppuration of the middle ear, and when admitted he had general brain symptoms, and also symptoms of general infection. When the skull was trephined 8 ounces of very putrid pus were evacuated from an abscess over the temporo-sphenoidal lobe; great relief followed, but he died from secondary lung affection two weeks after.

(*c.*) *Idiopathic.*—Suppuration, diffuse or in the form of abscess, may result from tubercular disease or from secondary infective causes in connexion with local affections. Such suppuration may result in *general* or *localized* symptoms. If the symptoms are localized, the duty of the surgeon is to operate, guided by them. If the symptoms are more general and unrelieved by medical treatment, an exploratory opening should be made at some point where no important intra-cranial vessel or sinus is likely to be injured; and if the suppuration is discovered, a second or counter-opening should, if necessary, be also made.

In connexion with abscesses of the brain from all causes I would remark,—Brain abscesses are (1) most common in the white matter of the brain; (2), they may occur between the bone and dura mater; (3), they do sometimes exist for a considerable time without giving rise to marked symptoms, and yet serious symptoms may occur suddenly by rapid extension, or by bursting cause death; (4), that they may be either well circumscribed or more or less diffused, with softening of the brain tissue round them.

III.—*Hæmorrhage.*

(*a.*) *Traumatic.*—Intra-cranial hæmorrhage may be the result of any injury to the skull with or without fracture or perforation of the bones by a foreign body. The source of such hæmorrhage may be the rupture or wound of bloodvessels external to or in connexion with the membranes or of the vessels of the brain itself, as shown in the following case:—

A young soldier belonging to a Highland regiment stationed in the Castle was "larking" with some comrades. One of them had in his hand an old umbrella, with which he made a fencing pass at the patient. The umbrella stuck to the man's head and required a little force to detach it. Shortly after, the patient became faint, and was laid upon his bed and whisky administered to him. Some hours after, as he was showing signs of unconsciousness, his case was reported, and the medical officer in charge saw him and ordered his removal to the Infirmary. When admitted he had all the signs of compression of the brain, but no signs of fracture. He never rallied, but died some hours after admission. At the post-mortem it was found that the point of one of the spars of the umbrella had penetrated the vault of the skull, causing a small punctured wound the size of a crow quill, and had opened a branch of the middle cerebral artery, and caused extensive effusion of blood in the cranium. The skull was a thick one.

In cases where the symptoms are localized the procedure of the surgeon is quite clear, and that is to trephine over the part indicated and endeavour to remove clot and stop hæmorrhage. When the symptoms are more general, an opening into the skull may be useful in relieving pressure, and may also be useful in removing the blood which is causing pressure. The trephine should first be applied over the part injured, and if no clot is found there, the point opposite should be explored. Even in fractures involving the base of the skull, opening the cavity ought to be more frequently resorted to when the symptoms of compression remain unrelieved. A study of the exact nature of the accident and of the symptoms present will, as a rule, guide the surgeon to the special portion of the base of the skull involved in the fracture, and will so aid him as to the seat of the operation. In all injuries of the skull it may be noted that operative interference may be useful, not only in removing blood-clot or assisting the temporary removal of brain pressure, and so allowing time for the blood to be absorbed, but it may also give exit to the increased amount of cerebro-spinal fluid, which undoubtedly may act as a cause of brain pressure should it not be able to escape, as in cases where the injury communicates externally through the ear. The operation of Hartley, which exposes the Gasserian ganglion of the 5th cranial nerve inside the skull, has now been performed successfully in several cases, and some similar operation might be employed to remove clot or pressure from the base of the brain.

(*b.*) *Non-Traumatic.*—Hæmorrhage of a non-traumatic origin may be the result of a rupture of any vessel inside the cranium, but the most common sources of such hæmorrhage are from the anterior, middle (most common), and posterior cerebral arteries, and their branches. Any such hæmorrhage may prove rapidly fatal, owing to its amount or to its causing pressure upon special portions of the brain, but there is a not uncommon class of case in which the condition is not speedily fatal, and in which the symptoms of general brain pressure or of localized pressure continue. In the latter, surgeons should have no hesitation in operating with the hope of removing the compressing clot; and in the former, would it not be both wise and justifiable to operate with the view of relieving, even temporarily, general pressure in cases which after a reasonable interval show no signs of improvement? Post-mortem examinations have taught us how Nature will in time absorb collections of blood, the result of idiopathic hæmorrhage; and is it not reasonable to suppose that in some, at least, of fatal cases of such hæmorrhage, an operation, by relieving general pressure, would give Nature time to get rid of the compressing agent? The physician should seek the aid of the surgeon under such circumstances, and it will be the duty of the surgeon to open the cranium with every careful antiseptic precaution. Should there be any special guide to the situation of the hæmorrhage, the operation should be performed with a view of reaching this point; but if the symptoms are only general, a free removal of the skull wall with the object of relieving general brain pressure will be indicated. I am not prepared to advise that in these latter cases the brain itself should be much interfered with. All I suggest is that the general pressure should be relieved with the hope that clot may be absorbed. Here it may very properly be asked, At what point should the surgeon open the cranial cavity with a view of relieving general brain pressure? To this I would answer, on any portion of the vault where a free opening can be made without injury to sinuses or intra-cranial vessels, for it has been experimentally shown that pressure upon the upper surface of the brain causes the greatest amount of intra-cranial arterial tension.

IV.—*Epilepsy.*

(*a.*) *Traumatic.*—Injuries may give rise to epilepsy from primary or secondary causes,—the *primary* causes are foreign bodies, portions of the skull bones, clots of blood, or laceration of brain substance, producing pressure and irritation. But epilepsy is more frequently due to secondary causes, the chief of which are:—(1), The irritation of portions of depressed or displaced bone, which may not at first have caused symptoms; (2), the irritation caused by chronic inflammatory thickening of the bone or membranes, or by the formation of new bone, usually in the form of a spicula or spiculæ; (3), irritation, the result of suppuration; (4), irritation, the result of extravasation of blood occurring in the form of a blood cyst; (5), occasionally the irritation caused by the presence of some foreign body.

In the great majority of these cases there will be—to guide to the source of the irritation—(1), The history of the particular accident; (2), some external signs of the accident; (3), some localized symptoms.

Naturally the essential treatment of such cases is to get rid of the source of irritation, as has already been illustrated in the case of the girl suffering from necrosis of the skull bone, and abscess, the result of a scalp wound. In further illustration I record the case of W. W., æt. 55, who suffered from epileptic fits, which he attributed to a severe blow upon his head from a hammer twenty-five years before his admission. The fits had been steadily increasing in number, and were accompanied by some weakness of the left arm. I trephined over the motor area upon the right side of the skull, and found a large cyst, which was freely opened into. The wound of the operation healed rapidly, and the patient was much relieved, the epileptic fits being much reduced in number, but I have since learned that the fits have resumed. My experience would lead me to advise that such cysts should be for a time thoroughly drained; for unless this is done and the cavity of the cyst obliterated, the cyst will continue to secrete, and the conditions of pressure or irritation are not permanently relieved.

In all cases of traumatic epilepsy the result of primary or secondary causes, it must be remembered that degeneration or changes in the brain tissue may prevent the success of surgical procedure, even if the apparent irritation is removed.

(*b*.) *Syphilitic.*—As syphilis most frequently attacks the cortical substance of the brain, the occurrence of epilepsy in such cases is explained. Localized symptoms may or may not be present, but one peculiarity of this form of epilepsy is that the brain condition does not remain *in statu quo*, but continues, in the large majority of cases, to become sooner or later worse, to involve more of the brain structure, and result in more and more mental aggravation.

My own experience of syphilitic affections of the brain is that although a few, and more particularly if early treated, may recover, the majority steadily, and more or less rapidly, become worse, and die from the disease in spite of all careful medical treatment. Unless, therefore, localized symptoms—which have resisted anti-syphilitic treatment—are present, I cannot advise operative proceedings in this class of case.

(*c*.) *Developmental and Idiopathic.*—In considering the question of operative interference in brain conditions occurring during the developmental period, a careful study of the causes which may produce epilepsy or other brain disturbances may be useful. Briefly stated, these causes may be classed under—(1.) Traumatic causes, such as injuries inflicted during birth, or in infancy or early childhood; these injuries resulting in intra-cranial hæmorrhages or in inflammatory thickenings, and consequent pressure upon the brain, which may or may not be followed by changes in its substance. (2.) Inflammatory conditions, originating in the brain tissue or its membranes, and resulting in alteration in the brain tissue. (3.) Some arrest or alteration in connexion with the development of portions of the brain. (4.) In connexion with the two first causes one or more intra-cranial cysts may form, or collections of fluid may accumulate in the ventricles, causing hydrocephalus, and be an additional source of brain pressure. (5.) In the majority of cases depending upon these various causes the special change in the brain substance is an atrophy accompanied by sclerosis.

The portion or portions of the brain affected by one or more of these causes (for more than one cause may be present) will influence the particular symptoms or group of symptoms which are present in the variety of cases met with.

The symptoms in such cases may be classed under—(1), Varying types of paralysis; (2), mental deficiency, varying much in character and degree; (3), sensory alterations, also varying in their nature.

In all classes of case, epilepsy is common, and the fits vary much in degree and intensity.

From a consideration of the facts referred to it is evident that operative interference in cases in which the brain tissue has become permanently altered (atrophied and sclerosed) or absorbed by pressure cannot be satisfactory; but, on the other hand, operative experience in connexion with these cases has already proved that some of them may be more or less improved. As, however, the diagnosis of the exact brain condition is not easily made, such operations must be classed under the head of exploratory procedures.

Epilepsy, hemiplegia, and sensory defects, in these conditions, have been relieved by operation; and should a cause, such as a clot, tumour, thickened membrane, or cyst be met with and removed, a favourable result might be expected if the brain tissue has not undergone much permanent change.

In patients whose brains have reached their full developmental period, epilepsy (idiopathic) may result from any intra-cranial disease. If localized symptoms exist, the surgeon has no hesitation in exposing the special brain region and removing, if possible, any cause which may be producing the fits; but operations performed for epilepsy in which there are no special symptoms are not to be so lightly undertaken. At the same time, if the fits are constant, and unrelieved by other means, an exploratory opening of the skull might in cases otherwise favourable be justifiable.

It is likely that a certain proportion of what are supposed to be idiopathic cases are really the result of traumatic causes. Externally there may be no signs of injury, and the patient may have no recollection of having sustained an injury, but still the skull may have received an injury. It is therefore advisable that very careful examination—the head having previously been shaved—should be made, and searching inquiry instituted as to the possibility of an accident.

In idiopathic epilepsy with distinct localized symptoms operative interference is not always successful. This may be owing to the fact that the whole *local* cause is not removed or cannot be removed at the time of the operation. The excision of the portion of the brain apparently at fault has been practised in cases in which no good results have followed the opening of the skull and incision of the dura mater. In connexion with such excision of brain substance it is to be noted that such a procedure is not always followed by a cure, and also that it may lead to paralysis of the parts connected with this portion of the brain. At the same time, if the epilepsy is aggravated, such an operation is justifiable. A second operation has succeeded. I record in illustration the case of G. L., æt. 23, who in 1890 was admitted into Professor G. Stewart's wards suffering from Jacksonian epilepsy. He began to suffer from slight dizziness, coming on without warning. Six weeks after, he began to feel pricking sensations, commencing in right side of his head and passing down his right arm, right side of trunk, and right leg. Eighteen months after, he first had a fit, in which he became unconscious, and since then he suffered from numerous epileptic fits, commencing with same sensations in the right arm.

On 20th January 1893 I trephined, at the request of Professor G. Stewart, over the left motor area. A cyst was found and was evacuated. For the first few weeks after the operation the fits entirely ceased, but after this again returned, and they still continue. In this case I advise a second operation, and if the cyst still remains it will be drained. If no cyst be present, I would suggest a freer removal of the bone upon the left side over the motor area, and the application of electric test and excision of motor area if diagnosis is confirmed.

V.—*Intra-Cranial Tumours.*

The presence of a growth inside the skull sooner or later gives rise to symptoms the nature of which depend—1*st*, Upon the position of the tumour; 2*nd*, upon the amount of brain pressure which it is causing; and, 3*rd*, upon the presence of hæmorrhage or effusion caused by the tumour. The exact diagnosis of the presence of an intra-cranial growth cannot always be made, for other conditions, such as tubercle, chronic abscess, syphilitic deposits, and collections of fluid may give rise to very similar symptoms. The most marked symptoms of an intra-cranial growth are those of pain in the head, giddiness, vomiting, optic neuritis, epilepsy, mental irregularities, and in some cases special localized symptoms which will point to the position of the growth. All these symptoms may not be present. Further, the symptoms are usually steadily and more or less rapidly progressive, and are permanently unrelieved by any ordinary treatment. I say permanently, because it occasionally happens that medical treatment temporarily relieves symptoms.

Experience in connexion with intra-cranial growths has proved —(1.) That there is in some cases an uncertainty in regard to the exact diagnosis of the case. (2.) That although localized symptoms may point to its position, the nature of the tumour and its exact connexion can only be accurately determined by means of an exploratory operation. (3.) That if the tumour is circumscribed and can be removed, the result is likely to be satisfactory, more particularly when the growth belongs to the group of tumours in which malignant tendencies are slight. (4.) That when no localized symptoms exist, an exploratory operation may be performed in cases which point to the presence of an intra-cranial growth, provided that the symptoms have been unrelieved by a short course of general and of special treatment, should there be any syphilitic or tubercular suspicion. The tumour may not admit of being removed, but experience has shown that in some of these cases the operation has been useful in taking off general pressure, and has even, in a few instances, been followed by shrinking or degeneration of the growth. Again, a growth may give rise to effusion of fluid or to hæmorrhage, and the symptoms caused by these conditions may be at least temporarily removed by the operation.

The following case is interesting as illustrating the successful removal of a large intra-cranial tumour, the patient remaining well three years after:—

A. A., aged 43, admitted March 24, 1891. Patient had suffered for about nine months from pain in his head, and gradually increasing loss of power in left arm and leg. There was a history of several injuries to the head. Fell about 16 feet on to his head some years ago, and got concussion of the brain. Had a good many more knocks about the head, but none have left any mark. No history of syphilis; left leg and arm very much weaker than right, almost paralyzed; has twitchings on left side of face; double optic neuritis, more marked on left side; at times slight loss of memory for certain words; dizziness and a "bizzing" in his head. On *March 25th*, 1891, I trephined over motor area for left arm. On removing disc of bone it was observed that there was no brain impulse. Membranes did not bulge. Incised dura, and found that the brain tissue was replaced by a new growth.

Tumour was well defined, and so large that the opening in it had to be increased, although the trephine used was an inch and a quarter in diameter. The tumour was then enucleated with the fingers, and brought out in two pieces with the aid of a curved periosteum elevator. The tumour, which was the size of a tennis ball, presented the naked-eye appearances of a sarcoma. The opening in the membranes was stitched up to a certain extent, and a large-sized rubber drainage-tube was inserted into the cavity, and stitched to the skin. There was a good deal of oozing from the cavity, and the wound had to be dressed same night. After the patient had recovered from the effects of the chloroform, it was noticed that his left arm was paralyzed, but he appeared very well otherwise. On the 26*th*, patient said that his head felt better than it has done for a very long time. Temperature normal. 29*th*.—Wound has been dressed every day. Fair amount of discharge, apparently broken-down blood-clot. Temperature keeps normal. Power in left arm is returning. He can lift his arm from the bed to-day. 30*th*.—Dressed wound and removed tube. 31*st*.—Power in muscles of forearm is returning. Since tube removed, slight protrusion, either of brain or blood-clot, through wound. *April* 5*th*.—Steadily improving. Protrusion rather smaller. 25*th*.—Allowed to get up and walk about ward. Gaining strength rapidly. Protrusion nearly flush with skin now. 30*th*.—Is walking better now than he was able to do for some time before operation. Arm and leg went on improving steadily, gaining strength every day, and patient was sent to Convalescent House on 21st May.

Pathologist reports that tumour is a glio-sarcoma.

Feb. 13*th*, 1894.—Patient continues quite well, and has a good use of his arm and leg.

VI.—*Microcephalus and Hydrocephalus.*

The removal of portions of the bones of the skull in cases of microcephalus, with a view of allowing a brain arrested in development to expand and develop, has already been followed by fair success, and if practised before the age at which brain development ceases, may, in some cases at least, lead to a mental improvement.

Hydrocephalus.—Operative treatment in this condition has proved to be very unsatisfactory. I have tapped such cases on several occasions, and applied elastic pressure, but with little permanent benefit. As a rule, the surgeon does not interfere in these cases until the condition is aggravated, the collection of fluid large, and the brain tissue destroyed or atrophied. Is it not possible that an operation earlier in the progress of the disease might in some cases be more suggestive? The operation should be one of opening into the skull and careful drainage. I offer this as a suggestion, for I think it possible that in some cases a good result might be obtained should the brain substance not be seriously affected by some unremovable cause or destroyed by pressure.

VII.—*Mental Conditions.*

(*a.*) *Traumatic.*—It has been calculated that about 2 per cent. cases of insanity are the result of injury, and I would mention the following facts in connexion with this condition :—

1. The mental condition may show itself immediately after the injury, or at a more remote period.

2. The most common forms of mental condition are those of mania and dementia, with or without homicidal or suicidal tendencies.

The skull has been opened in a few cases of this kind with some success, and this class of case comes, in my opinion, under the head of justifiable exploratory operations, provided the exact site of the injury can be determined. It seems advisable in such cases to make the opening free, and to carefully search for any depressed bone, for any thickening or new growth of bone, or for any thickening or adhesion of the membranes. The possibility of a blood cyst or clot must also be kept in view, for the presence of these latter may not necessarily give rise to special symptoms of local or general pressure.

(*b.*) *General Paralysis.*—Although there is some difference of opinion as to the exact pathology of this affection, there can, I think, be no doubt that sooner or later serious changes or degenerations take place in the cortex substance of the brain. Hitherto operations performed for the relief of this condition have not been successful in causing permanent improvement, but this condition also comes under the head of justifiable exploratory procedure,—only, however, to be undertaken after a careful consideration founded upon an increased knowledge of the pathology of the disease.

(*c.*) *General.*—Unless in cases where localized symptoms are present, or in which general brain pressure symptoms are marked, I do not think that our present knowledge entitles the surgeon to interfere in ordinary cases of insanity. It is quite possible that further research may produce facts which point to possible removal of causes acting upon the mind, but meantime I am not prepared to advise even exploratory proceedings in cases of general insanity, unless some such symptoms as I have referred to exist.

In conclusion, it has been impossible for me, in the time at my disposal, to refer to many facts and details in connexion with this important subject, but I have endeavoured to suggest some facts, resolutions, and experiences, which I hope may be found an assistance in indicating and limiting the lines of the discussion.

I have thought it advisable not to give quotations from or references to authorities, because if I had done so my address would have been much lengthened ; but I desire to express my indebtedness to those distinguished gentlemen whose writings, researches, and experiences in connexion with intra-cranial departments entitle them to take a high position as authorities in connexion with the subject.

My views as to intra-cranial surgical procedures may to some appear too enthusiastic, but let us hope that brain surgery will not stand still, but will continue to advance. Let me add a word of caution, and it is this—that no new surgical procedures should be practised unless they are founded upon careful consideration, and upon a careful study of all new facts—pathological, physiological, psychological, and clinical. If the surgeon acts upon this principle, he will maintain the reputation of his science; and whether his procedure is successful or not, he will be able to feel that he has been justified in his attempts to add to our knowledge of the treatment of disease.

V.—THE DIAGNOSIS AND PROPHYLAXIS OF INTRA-CRANIAL COMPLICATIONS FROM EAR DISEASE.[1]

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It is no part of my purpose to go over *in extenso* the well-worn theme of the connexion between ear disease and intra-cranial mischief. I shall content myself by assuming a knowledge of the facts and theories as they appear and have appeared in current literature.

In such a discussion as we are now engaged upon, nothing can be gained by varying the verbiage of text-book utterances. I shall therefore, so far as possible, confine myself to criticism and novelty, and my vanity is not sufficient to encourage me in the hope that I shall be able to supply much of the latter.

As we are all aware, the intra-cranial dangers from ear disease which are most to be dreaded resolve themselves into—(1), Meningitis; (2), phlebitis of the cerebral sinuses, especially the sigmoid; (3), abscess. We may, I think, put aside the risks of hæmorrhage resulting from arrosion of the lateral sinus, while bleeding from the carotid does not fall within the scope of our subject.

Let us now turn for a moment to the symptoms manifested by the victims of intra-cranial inflammation following ear disease.

As a rule, the patients have suffered for a period of varying length from a chronic discharge from the ear. Among the poorer classes, however, this may have passed unnoticed, and the history may point merely to recurrent discharges, or sometimes the sufferer or his relatives may deny, in perfect good faith, all knowledge of a "running ear." As a matter of fact, even in chronic suppuration of the tympanum the pus may be secreted in such quantity that it does not run out of the meatus. Sometimes even when no history of discharge exists, the question, "Does any ill-smelling wax come from the ear?" will elicit an affirmative answer. Now, cerumen is practically odourless, and certainly not fœtid, so that we must look elsewhere for the fœtor, which may be due to eczema or some other condition of the meatus, but more probably is caused by chronic suppuration of the middle ear. It must also be borne in mind that while chronic disease of the tympanum is the common cause of cerebral mischief, the latter may owe its origin to acute otitis media.

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[1] I should like it to be understood that this paper is in no sense intended to be exhaustive. It was read as a contribution, from the aural point of view, to the discussion on Intra-cranial Surgery.

When a patient with head symptoms, which may be due to ear disease, comes under observation, the first necessity is, in my opinion, a careful objective examination of the ear. A good deal of information may thus be gained. The question, "Did your ear ever run?" may be answered in a way calculated to mislead, as I have already shown; and, besides, there may be no one to answer it, for the patient is not always able to do so. Even if there be a history pointing to past or even present ear disease, it by no means follows that this affection and the head symptoms are related to one another as cause and effect.

This brings us to the question, "In what form of middle-ear inflammation would the probabilities point to such a connexion?"

In a case of acute otitis media with a bulged membrane, were head symptoms to occur I should expect them to be due to the ear condition, unless some manifest second cause could be suggested. This statement applies with even greater force to an acute case in which perforation (either artificial or natural) has already taken place, and where symptoms pointing to cerebral complications exist. From this last statement, however, I desire to except, to a great extent, acute middle-ear inflammation following influenza. It is true that after this disease a form of the affection may occur which tends rapidly to be followed by implication of the temporal bone with all its attendant risks. It is, however, equally true that a considerable number of cases are characterized by a continuance of pain after perforation of the membrane, and yet no harm ensues. Not only may pain continue, but the temperature may remain high, and sometimes the whole case presents all the characteristics of threatened intra-cranial mischief, and yet all the symptoms may disappear without any operative interference.

If a patient suffers from chronic suppuration of the middle ear, and at the same time shows evidence of intra-cranial inflammation, probability certainly points to the former as the cause of the latter. To say, however, because a patient has or has had a running ear and has now head symptoms, that therefore the ear must be the cause of the intra-cranial mischief, is most illogical. Very strong presumptive evidence of the connexion of the two as cause and effect is afforded if the history points to pain localized in the ear as having preceded more diffused headache. I need hardly touch upon the fact that the occurrence of tenderness or swelling in the neighbourhood of the ear points in the same direction.

Coming now to actual examination with the speculum, we trench upon more difficult ground. It is commonly believed that perforations of Shrapnell's membrane, indicating, as they do, attic suppurations, are more often causes of intra-complications than other forms. Of this I have never been able to convince myself. Of course, however, a small perforation, wherever situated, is more dangerous than a large one. A large clean cut orifice in the lower part of the membrane, associated with a pink healthy-looking tympanic mucosa, is, so far as my experience goes, least likely to be found in a case in which intra-cranial suppuration depends upon ear disease. Complete destruction of the membrana tympani, however, does not always come under this category. In these cases we often find that the malleus is left with two shreds of membrane alone supporting it in its upper part. On observing closely, pus may be seen to be oozing from the roof of the tympanic cavity, and in almost all these cases the secretion is intensely fœtid. Where this picture is found in a head case, the symptoms of which are consistent with an aural origin, the last named is probable.

The presence of granulations in a diseased ear is strongly suggestive of defective drainage, and must therefore be looked upon with suspicion. Sometimes a polypoid mass may be seen to grow from the posterior wall of the meatus, and to be exuding pus from its centre. A bent probe introduced into this will often come upon carious bone. It is almost unnecessary to add, that whenever the probe detects dead bone objective evidence of the presence of a dangerous ear lesion is furnished. The same may be said of cases where we have, either from ocular evidence or from the history, reason to suspect the presence of cholesteatomatous masses within the recesses of the middle ear.

In estimating the probability or the reverse of the extension of inflammation from the ear to the endo-cranium, I attach much importance to the presence or absence of fœtor. I have said that a large healthy-looking perforation in the lower part of the membrane usually makes me doubtful of the ear as the cause of the head trouble. My next step, after finding this condition, is to pass a little cotton wool twisted round a probe down to the perforation and rub its edges. If after this no trace of odour be perceptible on the wool, I am strongly inclined to think that the ear should only be looked upon as the "fons et origo" if no other possible cause can be discovered. It is well known that when danger threatens from an otorrhœa the discharge often gets scanty or appears to cease altogether. In such a case, however, a little dried-up *débris* at least will be detected in the meatus, and this will be found, if tested by the method indicated, to be most intensely offensive.

Let us now turn to the consideration of the course of events when intra-cranial inflammation results from ear disease.

I believe that the first manifestation of danger will invariably, or almost invariably, be pain in the ear, or perhaps over the mastoid. Sometimes the latter is distinctly tender, or it may show evidence of inflammation either in the form of external swelling or projection of the auricle, resulting from exudation between the bone and the cartilaginous meatus. I cannot help thinking that a good deal of misconception exists with regard to so-called mastoid periostitis. For my own part, I am always inclined to think that, given deep-seated pain in the ear with some pyrexia and a tendency to rigors, the appearance of distinct external evidence of inflammation over the mastoid is a favourable rather than an unfavourable symptom, for it indicates that the spread of inflammation is outward rather than inwards. Tenderness without any external evidence of inflammation is of much graver import, indicating, as it does, deep ostitis.

Pain in the ear is soon followed by diffuse headache, and vomiting may or may not occur. Whenever this state of matters has been reached, or, indeed, whenever in a case of middle-ear suppuration danger seems to threaten the patient from this cause, drainage is urgently indicated, and one of the operations to be referred to later should be performed.

We must now turn very briefly to the diagnosis of intra-cranial mischief as it results from ear disease. I shall presently touch upon the differential diagnosis of the different forms of inflammation which may attack the brain and its membranes. First, however, we must ask ourselves whether it is possible to distinguish commencing intra-cranial mischief from the symptoms liable to be caused by retention of pus in the middle ear. I venture to think not, for both conditions give rise to pain, both may be associated with rigors and vomiting, in both we may have giddiness, and sometimes optic neuritis has been found absent in the graver lesion and present in cases which have recovered without operative interference. These facts being as they are, we are often left in doubt at the very threshold of our subject. It is therefore all the more important to establish free drainage from the middle ear early in the case. Manifestly, if serious symptoms continue after this has been done, we may suspect that the intra-cranial structures have become implicated, or it may be that in removing diseased portions of the temporal bone we have to do so to such an extent that an extra-dural abscess is opened and drained, as occurred in one of my own cases, where the patient made an excellent recovery.

As before said, the extension of pyogenic organism to the brain and its membranes may give rise to—(1) abscess; (2), meningitis; (3), phlebitis of the sigmoid and other sinuses. Can we differentiate these conditions? We have seen how difficult it often is to decide when inflammation has already attacked the intra-cranial structures. We have now to point out how hard it is, given the existence of suppuration within the skull, to determine its exact nature.

It is no uncommon thing to meet with septic thrombus of the sigmoid (or other) sinus, purulent meningitis, and abscess in the same case, while two of these conditions, of course, still more frequently co-exist. It is a regrettable fact that, brought face to face with the intra-cranial complications of ear disease, the dicta of the text-books are of little use. In such a case it is probably best to begin by having an hourly, or at least a two-hourly temperature chart prepared. If we find very marked fluctuations within short periods, and if rigors be severe and frequent, associated with perspirations, we may suspect septic thrombosis, which in most cases has involved the sigmoid sinus.

Time does not permit me to enter upon the signs and symptoms which differentiate a thrombus in this vein from a similar condition of other sinuses. Suffice it to say that not uncommonly the jugular can be felt to be corded, and that more or less œdema of the mastoid and adjacent region may be found, while there is marked stiffness in the neck. Both conditions, however, may be readily similated by inflammatory swelling of the glands under the sterno-mastoid, and by inflammation of the mastoid bone.

Again, it has been said that in thrombosis of the sigmoid sinus there is defective filling of the jugular on inspiration, but I have not been able to verify this symptom. In not a few cases evidences of septic changes in the lungs, and even in other parts, are met with. The presence of a patchy pneumonia, if it exist, will therefore form corroborative evidence of the existence of septic thrombosis.

Let us now ask ourselves by what signs and symptoms we are to differentiate the condition just described from diffuse suppurative meningitis. In both cases there is headache, in both there may be optic neuritis, and in both there is pyrexia. The latter is, however, more continuous in meningitis, there is an absence of the marked remission and rigors, there is perhaps more intolerance of light in the early stages, and, finally, a greater degree of tenderness. The diagnosis of suppurative meningitis is, moreover, often complicated by the possibility of its being of tubercular origin, and then another difficulty is added to the already difficult task.

Intra-cranial abscess is the next complication the diagnosis of which we must consider, and the chief question is whether in this condition there are found any symptoms which definitely distinguish it from meningitis. In spite of the elaborate semeiology which has been described in connexion with cerebral abscess, I have very grave doubts whether for purposes of differentiation any points other than the following are of importance in the majority of cases, viz.,—(1), Pulse; (2), temperature; (3), percussion tenderness. Undoubtedly pulse and temperature are the most important. If either or both be persistently subnormal, strong probability points to a localized collection of pus. This may also be suspected if at some period of the case either have been noted to be considerably below the normal. Sometimes localized percussion tenderness is of value, but it is at best of secondary importance. Sometimes a chronic abscess may be diagnosed by the following combination of symptoms,—(1), Pain in one ear, which is the seat of suppuration; (2), optic neuritis; (3), subnormal pulse and temperature; (4), continuous headache. Alike in meningitis and abscess, so-called focal symptoms are usually absent. When they do occur in a comparatively early stage, their existence is presumptive evidence in favour of abscess. In the later stages of meningitis it is, of course, possible that various nerves may become involved, while paresis in the regions supplied by the pneumogastric, glosso-pharyngeal, and spinal accessory nerves has been observed in thrombus of the sigmoid sinus and jugular. In a suspected case, then, if we have evidence of hemiplegia, paresis of the third nerve, rapidly increasing deafness on the opposite ear, without apparent cause or other localizing symptoms, we may from these draw conclusions in favour of abscess. It has been suggested that estimation of the quantity of pus issuing from the affected ear may be utilized in certain instances, and Macewen records a case in which examination of the ear revealed erosions in the tegmen tympani from which pus issued. Probably the upper part of the tympanic cavity is here intended, for the tegmen tympani cannot be seen through the speculum.

These methods of examination seem to be of value in the few cases where positive results can be obtained, and the same statement applies with even greater force to cases in which a fistulous communication can be discovered. When all is said, however, the diagnosis of intra-cranial abscess can rarely be arrived at with any degree of certainty. It may be noticed that I have not referred to the state of the pupils, as I doubt whether their condition alone has much differential value, and I have endeavoured to touch only upon points which appear to be of special importance.

Even assuming, however, that we have been able to diagnose the existence of an abscess, another grave difficulty confronts us. Is the pus in the cerebrum or cerebellum? There are certain points which may in some cases be of use as guides on this point. Thus if there be marked involvement of the mastoid region, the probability of cerebellar abscess is greater than where the symptoms are confined to the tympanum. Again, if the tuning-fork test points to nerve deafness we may, if other symptoms lead to the suspicion of cerebellar mischief, be thus strengthened in our surmise. It is said that very marked sickness, great pain, especially in the occipital region, and giddiness, are more or less characteristic of cerebellar mischief. Macewen seems to attribute importance to slowing of the respiration, yawning, clenching of the teeth, and retraction of the head as evidences of cerebellar abscess. Perhaps, however, our working hypothesis ought at present to be the greater probability of abscess in the temporo-sphenoidal lobe; for no statistics adverse to this statement have yet been adduced. Unless, therefore, the symptoms point very conclusively to the cerebellum, the cerebrum ought first to be explored; and in weighing these symptoms we must not forget that both giddiness and vomiting may be due to ear disease alone.

Let us now turn to the question of prophylaxis of intra-cranial complications due to suppurative middle-ear disease. I shall not waste time by reference to the indications for such simple interference as puncture of the tympanic membrane in acute cases, enlarging small perforation, or removing granulations and polypi in chronic diseases. The operations which may in a larger sense be considered prophylactic are somewhat more grave than those, viz.—(1), Excision of the tympanic membrane and malleus, with or without removal of the incus; (2), opening the mastoid antrum; (3), Stacke's operation and its modifications.

There can be no doubt that the first of these operations is of very great value in draining the attic of the tympanum. It is further satisfactory, in so far that the hearing is by no means necessarily harmed, and often improved. I do not think time will permit me to enter into details as to the method, which can, moreover, be found described in recent text-books. I hope at our next meeting to show a patient in whom this operation has been successful both in relieving pain and improving hearing.

Opening the mastoid antrum according to the classical method advocated by Schwartze is now an operation known to all surgeons. It yields the most excellent results in acute and subacute cases, but in chronic ear disease it only sometimes leads to an absolute cure, and this only if the communication with the antrum be kept up for a long time.

Bergmann and Küster both recognised this, and proposed the removal of the upper and posterior walls of the meatus. It was reserved, however, for Stacke to introduce an operation which, I think, fulfils surgical principles to an extent not previously attained. Briefly, his *modus operandi* is as follows:—An elliptical incision is made a little behind the posterior and upper attachment of the auricle. The soft parts, including the periosteum, are detached forwards, and this process of detachment is carried into and round the meatus. The soft parts of the auditory canal are cut through as deep as possible, and the flap—including auricle, cartilaginous meatus, and skin and periosteum of the osseous canal—

is drawn forwards. Either by direct or reflected light the remains of the membrane and its surroundings can be seen. The upper part of the tympanic ring is then chiselled away, and access is thus gained to the attic of the tympanum. After this the remains of the membrane, together with the malleus and incus, are removed. If the tympanic cavity alone is affected, this terminates the operation. If the mastoid also is involved, Stacke seems to open the antrum in the ordinary way, and afterwards take away also the posterior wall of the meatus. He then forms a flap from the soft parts which have been loosened from the meatus, with which he covers the bone.

In a case which I recently operated on by this method, I reached the antrum by removing the posterior and upper wall of the meatus. This did not necessitate any further incision, and the wound behind the ear was closed by sutures after the soft parts of the meatus had been slit longitudinally, as recommended by Stacke. After this the external auditory canal was dusted with a mixture of boracic acid and iodoform, and plugged with iodoform gauze. I hope to show this patient at our next meeting.

I feel that I have already wandered beyond my province, and do not desire to trespass upon the question of treating intra-cranial abscesses. The success which has attended the method of operating just described, however, has led me to reflect whether in most cases of intra-cranial mischief due to ear disease it would not be well to carry out Stacke's operation or some modification of it. In this way the hidden recesses of the middle ear can be explored, all dead bone can be removed, and in removing it we may hit upon an extra abscess, or upon a fistula indicating the existence of a hidden lesion, as recorded by Jansen, who, by enlarging an orifice in the region of the horizontal semi-circular canal, was able to drain a deep extra-dural abscess.

Further, by removing the upper wall of the meatus, we may, if we so desire, explore the dura, and, if necessary, the tegmen tympani may also be taken away. Again, in operating on the mastoid, we should, I think, remove all diseased bone, regardless of the question of exposure or non-exposure of the dura and sigmoid sinus. The evils of doing so are certainly less than the dangers incurred by leaving the infected osseous tissue *in situ*.

I hope to show at our next meeting a patient in whom I removed in this way most of the mastoid and portions of both the parietal and occipital bones, evacuating at the same time an extra-dural abscess, which was evidently in intimate relation with the lateral sinus. One of the difficulties which at present beset aurists is the question when to recommend an operation. Removal of the membrane and ossicles may injure the hearing, although it does not usually do so, and in some of the cases where this operation seems to be most indicated—*e.g.*, perforations of Shrapnell's membrane—the auditory function is frequently very well preserved. It therefore becomes a serious question whether we are entitled to advise so important an operation before evidence of danger, in the shape of pain, has shown itself. Of course if the patient resides out of reach of skilled assistance, this should weigh with us in recommending the operation. Again, with regard to opening the mastoid, Stacke's operation and its modifications, the same dangers to hearing exist, and from the very nature of these methods there must be some risk to life from their performance.

Here, too, I have been accustomed to wait for the evidence afforded by pain, excepting in cases where the patients were to be out of reach of skilled aid.

Whether one is justified in thus delaying is of course a doubtful point. A large number of people have more or less discharge from the middle ear all their lives; others have frequently recurrent discharges, and are yet none the worse to all appearance. If one can have such persons within reach, I believe that a fairly safe rule is to operate soon after the occurrence of persistent pain. Of course I do not refer to cases where manifestations of dead bone are present, which, in themselves, are usually enough not only to warrant but to indicate interference.

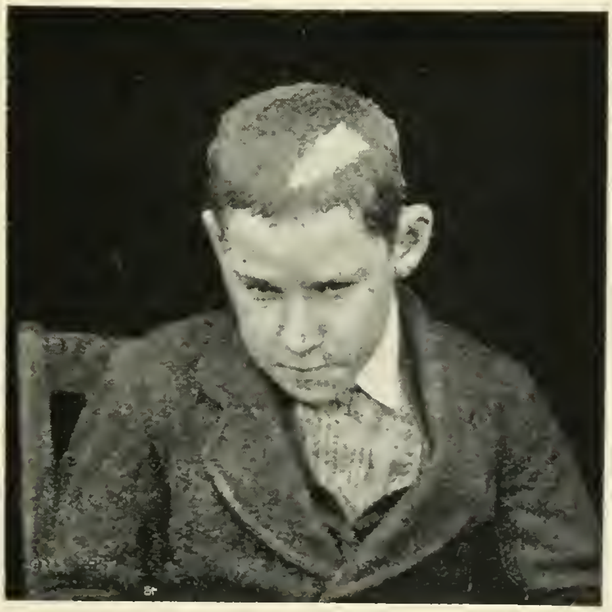
VI.—A CASE OF GUNSHOT WOUND OF THE HEAD.

By Robert Wm. Irvine, M.A., M.B., C.M., F.R.C.S.E., etc., Pitlochry.

A case of surgical and medico-legal interest, in which a gunshot glancing wound of the head, involving considerable loss of brain tissue and considerable loss of skull, recovered. The healed wound was photographed, and places on record an authentic proof of the shape which a healed gunshot wound, delivered within a limit of from 6 to 10 feet from muzzle to object, would present; of interest, especially in view of the importance of its shape, in reference to the direction from which the shot was fired.

W. D., aged about 13, a herd boy, was inadvertently shot in the head on the 20th of September 1881. The shot was from a single-barrelled old-fashioned gun, percussion action, loaded with No. 6 and 5 lead drops, and ordinary black powder, muzzle loading. The accident occurred in a farmyard, whose dimensions enable me to bring the range as not more than 10 feet, and not likely less than 6 feet, though possibly as short as 4 feet. The injured lad had on a cloth cap. He was shot "*from in front,*" in the left frontal parietal region. Bonnet and skull *débris,* with cerebral slush, were deeply in the brain wound, and had to be hooked out by the fingers from as deep as the region of the base. The sensation was, that so deep was the finger that a rash dig for *débris* might touch too hard a vital centre, and startle one with a catastrophe. But luckily that did *not* occur. The boy fell to the shot, but was not unconscious; and, wounded as he was, made at least 10 yards of his way to the house before he sank and required help.

The wound was rendered as aseptic as possible, and manual pressure uninterruptedly kept up, with an ice-cap, from the first, to counteract the inevitable tendency to "hernia cerebri," but of no avail. By the end of two weeks a cerebral protrusion of not less than 2 inches of cauliflower brain excrescence was there, and always on the increase. The orthodox thing was to shave it off, and keep doing it as it protruded. I had already been so near the base of the brain, that I avoided that *ex cathedrâ* method of dealing, and adopted another, and, I believe, *the* wise course,—I *starved* the boy, and kept him in a sitting posture continuously, with the manual ice-cap pressure, never intermitted; gave him ice-water and milk, and large doses of bromide of potassium. Within seven days of this my hopes began to be realized. The protruding, wagging cauliflower had got smaller. The line of ulceration between its base and the bone margin had given way to a pronounced development of the blue line of cicatrization; the union of the internal and external once established, "hey, presto!" like magic, the "hernia cerebri" was pulled back into his cage, and the wound healed in another week. And from start to finish there was never a bad symptom referable to the brain injury, except an irritable alteration of his temperament, and a very marked, very interesting, and very instructive want of word memory—"amnesic aphasia." The boy has since then, except for the temporary discomfort of the irritation caused by the separation of spicular fragments from the margins of the fossa, never had a bad turn, and has for over ten years been doing ordinary work as a wood forester in the Duke of Atholl's estate service.



The illustration is from a photograph taken, as I have said, in my presence whenever the wound was healed. The shot was from in front. The white mark represents a fontanelle, $2\frac{1}{2}$ inches by $1\frac{1}{4}$ inch broad at its base at the back; and all the white portion representing cicatrix—no bone—and pulsating, the apex of the triangle being the glancing bone wound of impact, the square base the deepest bone wound, and quite abrupt. The boy is quite well, except that he has a certain excitability and want of inhibitory power when provoked.

I offer you this narrative because I think it has an inherent surgical interest of its own; and also because, with the authentic illustration, it has a bearing, in my humble opinion, more *cogent*, and more *proved*, than any evidence *rè* gunshot wounds and their probable direction and shape, adduced at the late Ardlamont trial, —a trial in which every medical man in the country, especially if he can handle a gun, and has some shooting, *must* have, and as matter of fact *has*, taken a deep and vigilant interest.

VII.—MAN AND THE STATE.

(Presidential Address to Fife Medical Association.)

By T. G. Nasmyth, M.D., D.Sc., D.P.H., Medical Officer of Health for Fife and Clackmannan.

Readers of Herbert Spencer's works may recollect some extraordinary doctrines which he formulates in one of his books regarding the position which the State should adopt in the management of laws affecting the civil liberties of the subject.

In answer to a question regarding State interference with infectious diseases, "Surely you would not have this misery continue?" he writes,—"Observe what is implied by this exclamation. It takes for granted, first, that all suffering ought to be prevented, *which is not true;* much suffering is curative, and prevention of it is prevention of a remedy. In the second place, it takes for granted that every evil can be removed, the truth being that, with the existing defects of human nature, many evils can only be thrust out of one place or form into another place or form, often being increased by the change." And again, on talking about Governmental failures, he writes,—"So, too, with the prevention of disease. It matters not that under the management or dictation of State agents some of the worst evils occur."

According to "the laws of right social relationships that every man has freedom to do all he wills, provided he infringes not the equal freedom of any other man."

"Every proposal to interfere with citizens' activities further than by enforcing their mutual limitations is a proposal to improve life by breaking through the fundamental conditions of life."

Some of Spencer's criticisms are quite true, and quite unanswerable, as various specimens of grandmotherly legislation we have been inflicted with can do nothing but mischief, and lead the citizen to think that the State is his wet-nurse. Every member of the community should have his full share of responsibility, and this should not be removed by the State, but at the same time the State should be the supervising and controlling power, to see that all administrative machinery is kept working actively, harmoniously, and homogeneously.

In his views of sanitary administration Mr Spencer is utterly wrong, as of course he could not grasp the problems that are associated with State Medicine. Mr Spencer says it is not the duty of the State to protect the health of its subjects. Municipal administration for sanitary matters is wrong, and all taxation for sanitary purposes is wrong. To some of these arguments I shall endeavour to reply before I finish.

Carlyle, who may fairly be considered to represent the modern day philosophy, in *Past and Present* writes in another strain, and regarding sanitary regulations says,—"Are not sanitary regulations possible for a Legislature? The old Romans had their Ædiles, who would, I think, in direct contravention to supply and demand, have vigorously seen rammed up in total abolition many a foul cellar in our Southwarks, St Gileses, and dark poison lanes, saying sternly, 'Shall a Roman man dwell here?' The Legislature, at whatever cost of consequences, would have had to answer, 'God forbid.' The Legislature, even as it is now, could order all dingy manufacturing towns to cease from their soot and darkness, and let in the blessed sunlight, the blue of heaven, and become clean and clear. The Legislature can say to others, 'Go ye and do likewise—better, if you can.'"

I have quoted from these two distinguished philosophers, as they represent ways of thinking totally distinct from each other. We have one teaching that sanitary administration by the State is not necessary nor right, and we have the other, that the State has power, and ought to exert it more and more, for the amelioration of the conditions of the people.

The question as it now presents itself to the people of this country is not one of abstract philosophy, but one of very practical politics, and one which in future will turn the balance in political elections. The issue is very clear. In a few years the State will show its interest in State Medicine and Public Health by the appointment of a Cabinet Minister to preside over the various Central Boards in Great Britain and Ireland.

We have reached a point when it would be interesting to go back in history and inquire whether or not the office of the sanitarian has been forwarded by the State, and we have only to look into Roman history to find that these great pioneers of civilisation, as became their knowledge and wisdom, made the sanitary conditions of their cities subjects of special consideration.

As early as 500 years B.C. the office of the Ædiles was established in Rome. Under them the city was divided into four police districts, and enactments were made for the efficient repair of the network of drains, large and small, which permeated Rome, for the proper cleansing and paving of the streets, for preventing the nuisances of ruinous buildings, dangerous animals, or foul smells; for the destruction of unsound goods, and for the oversight of baths, taverns, etc. At so far back a period in history it is not possible to get full and accurate accounts of their form of government and sanitary administration, but we have evidence in the testimony of those stupendous remains of engineering works which, defying time and decay, point at once to the foresight of the Government and the skill of the engineers in establishing such enduring monuments of sanitary enterprise.

In Rome at the present time a vast sewer may yet be seen, constructed twenty-five centuries ago. The excavations at Pompeii exposed massive, closely-fitted blocks in the carways, showing that paving was attended to. While the aqueducts and the magnificent water service for Rome excite our admiration at the present day, public baths, washing-houses, and gymnasiums complete a list of sanitary requirements which few modern cities possess. Among the fragments which survive of the old Roman Law none is more emphatic than the commands to prevent the water supplies from pollution. We also read that before the time of Hadrian Roman cities had public medical officers. We have thus abundant evidence that with the Romans the health of the people was a supreme law, and the duty of protecting it was undertaken by the State, and that under the State in Rome there was a very complete municipal government exercising the most careful guardianship over sewers, drains, water supplies, and the removal of nuisances. However interesting it would be, to trace the great lapse that took place in sanitary administration from that time to this would be beyond my power, and it is sufficient to know that for centuries State Medicine was signally neglected, and the world was scourged with plagues of all kinds as a result.

It may be asked, Why should the State undertake the control of Medicine in relation to Public Health, and not communities and individuals? and this may be answered in many ways.

Economic Value of Population.

A nation will surely decline in which the death-rate exceeds the birth-rate, and the lower the former compared with the latter the more surely the nation is progressing. Every individual member of a community has a certain money value, represented by the wages he is earning. Every day he is set aside by sickness represents a loss to the State. Deducting the amount needed for subsistence, £150 is the mean net value of each member of the male population, estimated by the standard of the agricultural labourer. If by sanitary measures we can prevent sickness and extend the duration of life, we thereby enormously increase the revenue of the State. Malthus, who was not an advocate of Preventive Medicine in its ordinary sense, was impressed with the wastefulness of a high infantile mortality, and says:—" A large birth-rate, together with a large infantile death-rate, is most wasteful to a State, as a large part of its produce would be distributed without return to children who would never reach manhood. A young person saved from death is more likely to contribute to the creation of resources than another birth. It is a great loss of labour and food to begin over again." The pecuniary loss from phthisis alone is, for every million children born, estimated at £14,499,400.

It goes without saying that to ensure the health of State-paid servants, such as soldiers and sailors, is of the utmost importance to the State, and as a matter of fact, nowadays, the greatest care is bestowed on the conditions likely to render these more healthy and to ensure them longer lives. The people of a country are as intimately associated with the welfare of a nation as its soldiers or sailors, and it is very false political economy to mete out the present half-hearted support which our State affords at the present day. The necessity for careful State promotion of Public Health increases year by year. Population in large towns is becoming redundant, the difficulties associated with living in dense populations increase, and the struggle for existence increases day by day. Locomotion is so rapid, thought is forced at the rate of the telegraph and telephone, the mind is taxed more in a certain class and the muscles less, and all these tend to lower vitality both of mind and body, and unless conservative measures are adopted the British race will degenerate. Many thinkers hold that the degeneration has begun, and we have not men with the same thews and sinews of former times.

Possibilities of Hygiene.

Readers of the interesting Lectures of Sir Benjamin Ward Richardson may remember a lecture on what he calls "Salutland," a model sanitary State in the twenty-first century of the Christian era. Dr Richardson thus describes it:—"We are no longer in England the short-lived people that we were. It is nothing remarkable in these days of the twenty-first century to see in our towns and cities many members of both sexes who have attained 100 years. 'Salutland' in the middle of the twenty-first century has been in existence for one hundred years, but it has developed so quickly, and has done so little to make a furious noise in the world, that its rise and growth have received but little attention. It has never once engaged in war—it has produced neither general nor admiral. It has produced some remarkable painters, sculptors, architects, musicians, and poets, and many men of distinguished ability and originality in science and literature." "The people" in this favoured country "are as beautiful as they are long-lived. Those four gates of our present cities of distinction—the asylum for the insane, the workhouse, the gaol, and the sick hospital—are unknown."

The late Professor Owen estimated from various data the ages of various animals, and man, judged by the same data and the same standard, ought to live 100 years, the period fixed in Sir Benjamin's "Salutland." This period is very short of the age in the most favourable life tables, viz., about 44 years for a man.

I began with the doctrines of Herbert Spencer, and I shall end this address with some replies to his arguments against State interference with sanitary administration, and for liberty of the subject in working out the problems of his own social welfare. In the first place, his philosophical creed takes no cognizance of the ubiquitous nature of infectious and preventable disease, of their world-wide distribution, of their epidemic expansiveness, and of the properties by which they may be carried from one State to another. The whole history of such diseases as small-pox, cholera, yellow fever, influenza, shows that the causes at work in promoting their spread are not localized in one State, far less village or city, but they are at work all over the world. Individual effort for the prevention of such diseases could do little or nothing, and the fact that various international congresses, within recent years, have met and discussed what inter-state remedies should be adopted for the prevention of such diseases shows that Spencer's doctrines are not accepted as of any use, but that State must act with State, and the greater the areas included in their consideration the more hope there is of the repression of epidemic diseases. Up to the passing of the Local Government Act in Scotland effective sanitary administration was impossible, owing to the smallness of the area under separate and numerous Local Authorities, and a very great advance was made by combining parishes into districts, but the exclusion of police burghs and small royal burghs from the new administration was a defect that still hampers the efforts of District Committees in their efforts to repress disease. How can we prevent scarlet fever spreading in the rural districts surrounding a small burgh which neither has adopted the Notification Act nor provided hospital accommodation? What security have we against the spread of cholera from burghs to county when all the elements for the spread of this disease are existing in these "ancient civic institutions," and where sanitary efforts are considered of much less importance than the possibility of an extra halfpenny being added to the rates for providing water or drains? Reform in this direction is still urgently needed. Sanitary administration in Scotland is by no means a policy of despair, however uphill the task and adverse the influences. Those who are carrying out the existing work must make up their minds to wait, and everything comes to him who waits. The doctrines of sanitation are being taught in the daily press all over the country; enthusiasts, acting from no selfish or interested reasons, are telling the masses of the possibilities of removing sickness from their doors, and of extending the sum of years to and beyond the threescore years and ten.

You, my brethren, are daily by the bedsides of your patients telling of the blessings of pure air, pure water, and of cleanliness in all its applications, and fearlessly saying, in the words of Charles Kingsley, "You, and not 'the visitation of God,' are the cause of epidemics." The present advanced position of the science of Public Health is due to medical discovery and teaching. All the signs of the times point to advances of still greater importance in the domains of Physiology, Chemistry, and Pathology, and the State cannot much longer allow investigations and discovery to be the efforts of private individuals, notwithstanding the fact that unpaid workers and pioneers have been at all times ready in our profession. It will only be a merited recognition of the duty which the State has to the interests of State Medicine when a Minister of Health is found in the Government.

Part Second.

REVIEWS.

Anatomy, Descriptive and Surgical. By HENRY GRAY, F.R.S. Thirteenth Edition. Edited by T. PICKERING PICK. London: Longmans, Green, & Co.: 1893.

A Treatise on Human Anatomy. By Various Authors. Edited by HENRY MORRIS. London: J. & A. Churchill: 1893.

Heath's Practical Anatomy. Eighth Edition. Edited by WILLIAM ANDERSON. London: J. & A. Churchill: 1893.

THE medical student of the present day cannot complain of any want of energy on the part of either authors or publishers in providing him with text-books on anatomy. If we might judge from the rapidity with which new editions of standard works, such as Gray and Heath, succeed one another, the science of human anatomy must be advancing by leaps and bounds. Perhaps, however, the competition of new rivals is a factor that must not be overlooked in seeking the causes for this activity.

The first edition of Gray was published in 1858, and ever since this text-book has been a popular one in this country, and still more so in America. This is probably due as much to the artist, Dr H. V. Carter, as to the author. In the preface to this edition the editor states that he has endeavoured to carry out the original aim of the work as a text-book for the students of surgery rather than for the scientific anatomist. It must be admitted that the "surgical anatomy sections" are well written, and show a practical knowledge of the bearings of anatomical facts to surgical practice; at the same time, in a systematic work of upwards of 1000 pages some little space might surely be devoted to the discussion of some of the more important morphological problems. The whole work abounds in minute details of little or no scientific interest or practical importance, and a judicious pruning in this direction would leave room for references to the comparative and developmental significance of various structures. This would tend to make the work more interesting, and the facts more easily remembered by the student.

In the reviews of previous editions we had to point out various errors and omissions; most of these have now been corrected.

The new text-book on Anatomy edited by Mr Henry Morris aims at giving "a complete and systematic description of every part and organ of the human body so far as it is studied in the dissecting-room." Histology and the greater part of development are omitted.

The first section, that of "Osteology," written by Mr Bland Sutton, is a very satisfactory piece of work, and, in our opinion, much superior to the corresponding section in Gray. It affords an excellent illustration of the interest that can be imparted to the study of the skeleton when treated from a morphological standpoint.

The "Articulations" are by the Editor, whose well-known work on the subject is a sufficient guarantee that it is entrusted to competent hands.

The "Muscles," by Mr J. N. C. Davies Colley, and the "Arteries, Veins, and Lymphatics," by Mr Walsham, do not call for special notice.

The "Nervous System" is written by Dr H. St John Brooks. He gives an excellent account of the cerebral fissures in the adult, but this part would have been greatly improved by some illustrations of their development. A proper comprehension of the relations of the Island of Reil, the fissure of Sylvius and its opercula, can only be obtained by a study of their development, and certainly comes more appropriately within the province of the anatomist than the physiologist.

Mr Frederick Treves gives an account of the "Abdominal Viscera." This section contains an excellent summary of his researches on the intestinal canal and peritoneum. Some of the diagrams he gives of the position of the viscera are open to criticism. Thus in Fig. 583 the inner borders of the kidneys are represented as being situated some distance external to the transverse processes of the lumbar vertebræ. This error, however, is corrected in the section on "The Urinary and Reproductive Organs," by Mr Wm. Anderson.

The last section is "On Surgical and Topographical Anatomy," by Mr W. H. A. Jacobson, and will be found extremely useful to the senior student.

The illustrations are numerous and very good. Altogether it is a work that can be strongly recommended as a trustworthy textbook.

Mr Anderson has subjected *Heath's Anatomy* to a thorough revision, and greatly improved the whole work, without any serious addition to its bulk.

A Practical Handbook of Midwifery. By FRANCIS W. NICOL HAULTAIN, M.D., F.R.C.P.E., Lecturer on Midwifery, Edinburgh School of Medicine. London: The Scientific Press, Limited: 1894.

IN the preface to this book the author says: "At the request of a number of my former pupils, I have published this little work. It is intended mainly to be a practical help to the busy practitioner, and, at the same time, to place before the student succinctly the chief points of practical importance in the study of obstetrics." Its size, and the fact that it is bound in flexible boards, suggests further that it is to be put in the pocket and referred to as occasion may arise. Whilst there may be two opinions as to the necessity for such books, and as to the utility of them in actual practice, there can be no doubt that the present work is one of the best of its kind. Beginning with the diagnosis and pathology of pregnancy, it rapidly passes in review all the conditions usually treated in a course of lectures on obstetrics, and it can be recognised that it is indeed a condensed set of lecture notes. The author has rather erred in putting his information in so condensed a form, and the English of the book is in consequence cramped and singularly devoid of verbs and the other parts of speech which impart elegance to our language. Perhaps, however, this was unavoidable. A word of praise is due to Dr Haultain for the thorough way in which he has brought the information in the book up to date; for we find references sufficiently full to such novelties as the induction of labour with intra-uterine glycerine injections, or with Champetier de Ribes's bag, and to symphysiotomy. On the other hand, the very important diagnostic point in cephalhæmatomata (the bony ring) is omitted. Nothing is said about influenza as a complication of obstetric cases, and the chapter on Infant Feeding is very slight (the wet-nurse is not even mentioned). There are a few illustrations, but they are so small in size as not to give a true idea of what they represent. With all these defects, however, it must be repeated that the book is one of the best of its kind, and is well fitted to perform the functions its author claims for it.

A Treatise on Gynæcology, Clinical and Operative. By S. POZZI, M.D. Vol. III. London: New Sydenham Society: 1893.

THE appearance of the third (and last) volume of Pozzi's work in its English form enables us to express an opinion on the whole treatise. It is a good work on Gynæcology, well translated; and author, translators, and the New Sydenham Society are all to be congratulated on its successful completion. Volume III. deals exhaustively with the new growths on the uterine appendages and ligaments, with tuberculosis of the generative organs, with pelvic hæmatocele, extra-uterine fœtation, diseases of the vagina and vulva (including ruptured perineum), and with malformations of the genital organs. A good index to the three volumes is appended.

The After-Treatment of Cases of Abdominal Section. By CHRISTOPHER MARTIN, M.B. (Edin.), F.R.C.S. (Eng.). London: Simpkin, Marshall, Hamilton, Kent, & Co., Limited: 1894.

DR CHRISTOPHER MARTIN has given us a very valuable practical handbook on the management of laparotomy cases, based upon the experience gained for the most part during his association with Mr Lawson Tait, when he had under his care over 1000 abdominal sections. The book is one that all laparotomists will do well to read, and the remarks on perforation of the bowel, stitch-abscesses, parotitis, surgical rashes, and extra-peritoneal hæmatocele, are very good. We imagine we have read the chief part of this book already, in serial form, in the *Birmingham Medical Review*, but it was worth reprinting.

The Diseases of Childhood (Medical). By H. BRYAN DONKIN, M.D. (Oxon.), F.R.C.P., Physician to the Westminster Hospital, and to the East London Hospital for Children at Shadwick; Joint Lecturer on Medicine and Clinical Medicine at Westminster Hospital Medical School. London: Charles Griffin & Co., Limited: 1893.

AMONG the many recently published books dealing with the diseases of children this is certainly one of the best. It assumes the reader's general knowledge of the diseases discussed, and emphasises only the points pertaining to childhood. It is written chiefly as a clinical manual for students and practitioners, and is based upon the author's experience and observation. We note throughout the work an independence of judgment and a broad common-sense which are by no means usual characteristics of such treatises. The author does not bind us down by hard and fast lines in the treatment of the various disorders, but, taking the wide standpoints of general principles, deduces from them the lines of management which have proved most successful in his own hands and those of others.

The subject is divided into six sections. Section I. deals with Disorders of the Alimentary Tract and of the Abdomen. These are carefully and thoroughly discussed, and we shall only notice small points here and there. The opinion is expressed that chronic enlargement of the tonsils arises most frequently in a gradual way, apart from any acute attack, and is frequently associated with adenoid growths. Early excision is strongly advocated. While in treating of certain cases of intermittent attacks of vomiting we find the refreshing remark, "Sometimes the origin is by no means apparent, and in the absence of evidence of dietetic causes, I prefer no diagnosis to the theory of gastric catarrh arising idiopathically, occasioned by a conveniently hypothetical chill." Acute diarrhœa is ascribed partly to improper feeding, and still more largely to poisoning by decomposition and fermentation produced by bacteria introduced with the food, and especially with milk. Indeed, the whole subject of diarrhœa in all its forms is wisely and judiciously handled. There is a short and useful chapter on Constipation. The author follows Wilks in believing that almost without exception cases of perityphilitis are primarily due to disease of the vermiform appendix.

Section II. comprises, under the head of General Diseases, rickets, syphilis, scrofulosis or struma, tuberculosis, anæmia in its various forms, purpura, and scurvy. In the treatment of rickets Dr Donkin seems to make no use of phosphorus, and he is convinced that many other factors besides improper feeding have a share in its causation. And we are glad to see he is old-fashioned enough to recognise a clinically useful distinction between scrofulosis and tuberculosis.

Section III., Acute Febrile Diseases. Small-pox is omitted, owing to the author's limited experience of the disease, while rheumatism is included in this section; and it also contains a very useful abstract from the Report of a Committee appointed by the Clinical Society of London to investigate the periods of incubation and contagiousness of certain infectious diseases. We observe that in the treatment of rheumatic fever in childhood Dr Donkin has, for good reasons given, abandoned the use of salicin or salicylates.

Section IV., Disorders of the Nervous System. This is the best section in a generally excellent work, and is notable for the wide grasp of the subject which is displayed in dealing with the connexions and analogies between the various forms of brain lesion. It begins with spasmodic disorders, contractions, epilepsy, etc.; and then describes the paralyses of childhood, acute diseases of the brain, and chronic diseases of the brain. Then follow excellent chapters on chorea, with a particularly full and useful discussion of its pathology; hysteria and functional nervous disorder, headache, otitis, and tetanus. We have not space to criticise these chapters, but we read them with interest and profit, and can heartily commend them to those who wish to obtain, in a concise form, a clear view of the subject.

Sections V. and VI. deal with Disorders of the Respiratory System and Disorders of the Heart and Circulation respectively. They are as thorough as the rest of the work.

We can highly recommend this as a thoughtful, accurate, and compendious treatise, written in a charming style and with much vigour, and evincing a wholesome scepticism as to routine views of pathology and routine methods of treatment. We do not agree with all the opinions expressed, but the author shows that there is a good deal to be said for most of them.

Nursing in Eye Diseases. By C. S. JEAFFRESON, M.D., F.R.C.S.E., Newcastle. Bristol: John Wright & Co.

MR JEAFFRESON'S neat and handy little book of ninety pages is the second which has appeared on this hitherto virgin subject in the last few months; it contains, though its size is small, nearly all the information which a nurse is likely to require who may happen to be engaged in the ophthalmic department of a hospital or in attendance on a private patient suffering from cataract or other eye-disease. The author does not disdain—and this is really one of the best features of the book, for it is thoroughly practical—to give his readers directions in regard to minutiæ: *e.g.*, the most suitable manner in which to arrange the hair of female patients who will require to have the eyes bandaged for some days is laid down. But, on the other hand, he occasionally waxes eloquent quite unexpectedly. He seems to have had troublesome interviews with children suffering from superficial keratitis. In place of the somewhat heroic treatment to which he appears to consider himself driven in order to bring about relaxation of the spasmodic closure of the lids, viz., inhalation of chloroform, we would recommend him to have recourse to that old-fashioned but very useful method—introduced, we believe, by Mackenzie—of dipping the child's face under cold water till he begins to gasp slightly; when he is released, the spasm is gone.

Mr Jeaffreson gives wise advice to the nurse in regard to the feeding of her patient, keeping him cheerful, watching against causes of inflammation after operation, and seeing to his comfort in many ways. It is refreshing to meet with a surgeon in these days who does not consider the whole art of medicine to be summed up in the single word antisepsis,—whose mind is not (save the mark!) so full of bacteria that there is no room for other and weighty matters; Mr Jeaffreson frankly states that he is not a devout believer.

He places considerable reliance, in various conditions of the eye, upon well-conducted massage of the globe, and here again we are quite at one with him, though we cannot say the same of all his prescriptions, taking the word in its widest sense. (Talking of words, what authority has our author for using the verb "to ablute"?) We venture to differ from him in the matter particularly of bathing the eye, for we think a nurse would not be doing her duty who permitted a patient to bathe his or her own eye after an operation, as Mr Jeaffreson suggests.

Sooth to say, there are not very many points in nursing special to ophthalmic cases, but the author calls attention to what there are, and nurses would do well to procure *Nursing in Eye Diseases*, and study the contents.

An Introduction to the Study of the Mould Fungi Parasitic on Man. By LESLIE ROBERTS, Dermatologist to the Liverpool Royal Infirmary. Liverpool: 1893.

IN his graduation thesis Dr Roberts gives the results and deductions drawn from a prolonged and careful study of the nature of the parasitic mould fungi.

As coming from one of the chief workers in this field we perhaps expected too much when we hoped to find in this thesis many doubtful points cleared up. But Dr Roberts, in his desire not to draw any not absolutely certain conclusions, out-Scots the Scot in his caution, and gives us not much absolutely new. Still the work is valuable from many points. His careful observations on the extraordinary variations which the same fungus may undergo under different conditions should serve to warn other workers not to be too rash in drawing conclusions from a few experiments. Though he deals with all the fungi which have been observed as parasitic on man, naturally the chief place is given to the ringworm and favus fungi.

Dr Roberts considers that there are several varieties of the ringworm species, and that one of these varieties causes pityriasis versicolor. Favus he considers another, but a closely allied species. He considers ringworm of the head and body as caused by two distinct varieties of the fungus, a view in which he is supported by many observers; but he considers the size of the "spores" a very misleading means of classification. We agree with him that so-called spores are short fragments of mycelium, which vary in size according to the conditions of nutrition. There is an interesting chapter on the foods of the fungi, and bearing in mind the title of the thesis, one must admit that though perhaps too philosophical and Darwinian in tone, this is no bad introduction to the study of the mould fungi. Considering the enormous amount of research work it must have entailed, it is rather surprising that it did not receive some commendation from the Senatus of the University.

The Healing of Rodent Cancer by Electricity. By J. INGLIS PARSONS, M.D. London: John Bale & Sons: 1893.

HAVING read the title, we opened this book with some curiosity, for the *healing* of any kind of cancer is something new.

To the first part of the book, which gives an account of rodent cancer, we need hardly refer, as it has little bearing on the subject. Then follow a few pages on the question of parasitism, in which it is suggested that the effect of electricity is to destroy the parasites and so cure the disease.

Then, following a short explanation of the methods of producing and using electricity, comes the main part of the book,—the method of operating and its results.

The author commences with twenty cells, and passes the current for one or two seconds through two needles inserted into the growth. If the pulse is unaffected the current is increased up to 300 or 400 milliampères, and the current passed alternately to and fro until sufficient *destruction* has been effected. The position of the needles is then changed, and the process repeated until the growth is destroyed.

The risk, says the author, is *nil*, for he has never lost one of the (*four*) cases he has operated on.

From the seventh to the tenth day the tumour sloughs away, and the resulting wound heals by granulation. It is thus evident that the method is none so new. It consists, certainly, in the employment of a new agent, but the result is the destruction of the growth, just as is aimed at by older methods; and we find on page 62 that, just as with older methods, a plastic operation may be necessary to counteract cicatrization.

We see nothing in the book to convince us that the best method of dealing with rodent cancer is not to recognise it early and remove it freely by the knife. As to the theory of electricity destroying the parasites because they have less resistance than the host whom they inhabit, we can only wish it were true. Were it so, tuberculosis, leprosy, and all those diseases due to micro-organisms would lose their terrors, for by a due regulation of the electric current we could destroy all the parasites, and leave their unfortunate host's tissues nothing to do but to dispose of their carcases.

An Illustrated Encyclopædic Medical Dictionary; being a Dictionary of the Technical Terms used by Writers on Medicine and the Collateral Sciences in the Latin, English, French, and German Languages. By FRANK P. FOSTER, M.D., Editor of the *New York Medical Journal*, Librarian of the New York Hospital; with the Collaboration of WILLIAM C. AYRES, M.D.; EDWARD B. BRONSON, M.D.; CHARLES STEDMAN BULL, M.D.; HENRY C. COE, M.D., M.R.C.S., L.R.C.P.; ANDREW F. CURRIER, M.D.; ALEXANDER DUANE, M.D.; SIMON H. GAGE; HENRY J. GARRIGUES, M.D.; CHARLES B. KELSEY, M.D.; RUSSELL H. NEVINS, M.D.; BURT G. WILDER, M.D. Vol. IV., with Illustrations. London: Sampson Low, Marston, & Co., Limited. New York: D. Appleton & Co.

WE welcome with pleasure and admiration the completion, by this fourth volume, of this colossal undertaking. The four splendid volumes, imperial octavo, contain 3093 pages, and weigh as nearly as possible 35 pounds. It has taken nearly twelve years to finish this gigantic task. It is complete, scholarly and accurate, well arranged, and for important words it is rather an encyclopædia than a dictionary. For instance, under the word suture, not only are its varied meanings given, but the anatomical sutures are enumerated and described, and the surgical varieties of suture fully detailed, intelligibly described, and illustrated by diagrams. The definitions are verified by references to standard and current medical literature. A very successful attempt has been made to indicate the pronunciation of those words belonging to English, French, German, Latin, Italian, Spanish, or Portuguese languages.

We hardly know whether to admire most the courage and public spirit which enabled the publishers to face such a gigantic enterprise, the splendid organizing power of the chief editor, or the zeal and industry of his subordinates. All are admirable, and have resulted in the production of a work which will last as a standard one on the subject, and without which no medical library can be considered complete.

Dr Chesterfield's Letters to his Son on Medicine as a Career. By Sir WM. B. DALBY. Reprinted from *Longmans' Magazine.* London and New York: Longmans, Green, & Co.: 1894.

THERE is a great deal of human nature in this little book. Full of shrewd common-sense conveyed in crisp pleasant language, these few short letters could be read in an hour and yet give food for much thought. An attempt is made in the two letters on "The Physician" to define what the *fine fleur* is that distinguishes the three who are in front rank from the thirty or the three hundred almost as good men who are in the second and third ranks of pure physic. Two great leading physicians are contrasted. One, "sound, straightforward, and reliable, with no little weaknesses;" the other, a very remarkable personality, evidently fit for any post, who could impress a patient by his mere presence, that "here comes the man that God Almighty has created to make me well."

For the surgeon the F.R.C.S. Eng. is a necessary qualification; then he must get into a good hospital and be able to stay in it and teach and operate fairly well. In time a certain measure of success is certain. Curiously enough, Sir William lays great stress on a power of oratory as a help to great success. Under the veil of an easy pseudonym, Paget's career and marvellous oratorical powers are sketched, and he is contrasted with those surgeons who cannot make even an after-dinner speech without humming and hawing.

Under the head of specialists Sir W. Spearman is easily identified, —a great surgeon who became a great specialist because his profession recommended him and trusted him. Contrasted with him we have a clever and severe description of the specialist who makes a booklet and then puffs and dines himself into notice, perhaps soon into fortune, but who never either values or deserves the favour of the profession.

As for his account of the general practitioner, would it were more than a happy dream of what his case should be. Given a long education in arts and medicine, abundant means, and abundant leisure, a young man so favoured by fortune may in time and in a West-End square realize the dream; but the great majority of the general practitioners, we fear, have to work much harder and with much less reward than Sir William Dalby describes. Character and conduct, added to moderate knowledge, and fortified by experience, will, even in these crowded days, always obtain a competence, and if health and life be added, will reach a happy and honourable old age.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING V.

Wednesday, 7th February 1894.—Dr Clouston, *President, in the Chair.*

I. Election of Members.

The following gentlemen were elected Ordinary Members of the Society:—Claude B. Ker, M.B., C.M., Viewfield, Crieff; William Craig, M.B., C.M., Foulford House, Cowdenbeath, Fife.

II. Discussion on Intra-cranial Surgery.

The President made some introductory remarks, after which *Prof. Annandale* opened the discussion from the surgical aspect by reading his paper on INTRA-CRANIAL SURGERY, which appears on page 898 of this Journal.

Prof. Grainger Stewart said he thought that the best thing for him to do in opening the discussion from the medical side would be to give an account of some of the cerebral cases he had had in which he had thought it necessary to ask the aid of his surgical colleagues, and then to sum up his own experience. The first case of the kind in which he had asked the surgeon to interfere was that of a man who, about twenty years ago, was under his care in the Old Infirmary. This patient while at his work sustained a severe blow on the vertex, from the fall of a barrel in a brewery in which he worked. This partially stunned him for a short time. Soon afterwards he began to exhibit distressing symptoms. He had headache of a very severe and persistent kind, and he began to take epileptic seizures of the most pronounced type. His eyesight became dim, and it was found that he had optic neuritis. Seeing that there was a history of injury to the skull at a definite spot, he considered it desirable to try the effect of operation. Sir Joseph Lister was called in to operate. He cut down where there was a slight depression of the skull. In the course of trephining the superior longitudinal sinus was accidentally opened into, and a gush of blood took place. The circlet of bone was turned out as quickly as possible, and the opening stuffed with little pieces of carbolized catgut. The loss of blood was considerable, but from this the patient soon recovered; and he never again complained of headache, although he lived for two years afterwards. He had no further epileptic seizures, and his sight improved to such an extent that he was able to read the time on the Tron Church clock from the Old Infirmary with perfect accuracy, while the ophthalmoscopic appearances correspondingly changed. Nothing could have been more satisfactory than the result of the operation. The patient, however, suffered from cardiac disease, from which he died two years after the operation. At the post-mortem there was found some adhesion at the point where the opening had been made into the sinus, but throughout the rest of the brain there was nothing abnormal whatever. It was suggested that the good result in this case was due to the copious bloodletting from the superior longitudinal sinus, but he attached no importance to it. It was at least certain that the operation had been followed by great benefit, and he thought it probable at the time that this was due to relief of excessive intra-cranial pressure. He therefore became enthusiastic about the relief of tension in the skull in such cases by operative interference. Not long afterwards he had a patient who was suffering from a tumour in the neighbourhood of the cerebellum. The man's sufferings were excruciating, and he resolved to try to give him relief by trephining. The result was that he obtained considerable relief in so far as the headache was concerned. The cerebellar tumour, however, of course continued to grow, and from this the man died not long afterwards. About the same time he had a case in which there had been meningitis. The circumstances of the case led him to conclude that it would be wise to trephine on the chance of being able to get rid of some pus from the brain, and so perhaps to relieve the patient's sufferings, which were very great. The operation was performed, but with no benefit. The case was one of advanced meningitis, and one of a kind in which he would not now recommend operative treatment. Another case in which he had tried trephining in order to relieve intra-cranial pressure was one in which there was a gliomatous tumour of considerable size in one of the hemispheres. All the benefit, however, they could claim from the operation was a few days' relief from the pain. Another case was that of a man who had some paralysis of one leg and arm, and also aphasia. Prof. Annandale cut down in the position to which from the symptoms they were able to localize the lesion. On introducing the finger into the trephine opening a soft velvety surface was felt, which made it clear that they had to do with a pachymeningitis. When the patient came out of the chloroform he began to speak, and could stand and walk. The effect of the operation in relieving the pressure was admirable, but there was a subsequent extension of the meningitis, and the patient died in a few days. The next case was that of a man who, on account of his personal appearance, was well known among the students by the name of "Socrates." Some years before he came under observation he had been struck by a hammer behind the ear, and afterwards became epileptic. At his own request he was trephined by Prof. Annandale over the seat of the injury. A cyst was found, the contents of which were evacuated and the wound allowed to close. The patient, however, was not materially benefited by the operation.

Prof. Annandale remarked that he was more and more convinced that these collections of fluid, diffuse or in cysts, should be drained.

Prof. Grainger Stewart, continuing, said the next case he had to refer to was that of a coachman who suffered from troublesome and continuous epileptic fits. An operation was tried in what seemed the most likely position of the lesion, but without good result. Another case was one which had been mentioned by Prof. Annandale, and which had been operated upon by him with brilliant success. A tumour of considerable size was removed. This case, along with another, formed the subject of an admirable clinical lecture published by Dr Gibson in the *International Clinics.* The outstanding symptoms were headache, double optic neuritis, paralysis of one hand and forearm, with paresis of the corresponding leg, impairment of memory, and loss of self-control. The patient, after much persuasion, consented to operative interference. The affected areas were cut down upon, and the tumour removed. The most marked improvement followed. The patient was able to walk long distances, could use his hands comparatively well, and was able for a certain amount of work. In a similar case on which Mr Alexis Thomson operated, the tumour was found to be deep-seated and could not be removed. A very remarkable case was one in which Mr Hodsdon had operated for him. The patient was a young woman who had thrombosis of the superior longitudinal sinus, which extended. She became aphasic, and suffered from seizures of Jacksonian epilepsy. The case turned out to be an absolutely hopeless one. There was found to be extensive meningitis as well as thrombosis. Lastly, there was the case of a man who suffered from epileptic seizures, which were at first confined to one leg. Prof. Annandale operated upon him, and found, in the position to be expected from the symptoms, a cyst, which he removed, with the result that the patient had experienced considerable benefit. Nevertheless, he was still unable to follow his occupation, and Prof. Annandale was inclined to try a second operation in order to endeavour to get away more cystic material. In the meantime, however, under potassium bromide the man was keeping free of fits, but if this should fail, he thought that it would be wise to return to surgical treatment. He would sum up by saying that according to his own experience they might conclude—(1), That, with proper antiseptic precautions, the operation of trephining was a safe one; (2), that operations at the seat of injury to the skull were very often followed by a most advantageous result, and often by a cure; (3), that in cases where there was evidence of a localized lesion, and where the symptoms were such as to entitle them positively to localize it, they were warranted in having recourse to surgical interference for its relief, whether the disease was abscess or tumour; (4), that in cases where there was undue intra-cranial pressure and suffering in consequence, they were fully warranted in trephining, even though merely as a palliative measure.

Dr M'Bride then read his paper on the DIAGNOSIS AND PROPHYLAXIS OF INTRA-CRANIAL COMPLICATIONS FROM EAR DISEASE, which appears at page 910 of this Journal.

Dr George Berry said that as far as the eye was concerned there was little one could say about actual brain surgery. In the first place, as regarded inflammation, he had seen cases in which septic inflammations about the eye had been followed by meningitis. In these very little could be done, as the meningitis soon became general. In one such case he had trephined, with Prof. Chiene's assistance, after the patient had become comatose, and succeeded in relieving the condition so far that he recovered consciousness, and lived for some days. Another way in which inflammation of the brain occurred from the eye was after enucleation, and that, no doubt, also from septic causes. He had had a result of this kind in a case in which not the eye alone but the whole contents of the orbit were removed. In all the reported cases the symptoms developed within forty-eight hours of the operation. A short time ago he had had a case in which he had to remove the eye for injury, with septic inflammation, and within twenty hours afterwards meningitis came on. Although there were no local symptoms he turned out the clot in the orbit and washed the wound with corrosive sublimate. Though everything was sweet it seemed that the mischief must have passed from the orbit to the brain. The case ended fatally, and on post-mortem examination it was found that there had been no extension from the orbit, but that there had been old disease of the ear, and that there was an abscess of the cerebellum. The wonder was what could have set up this condition all at once. The only thing that he could suggest was that the chloroform might have rendered active an old abscess. Regarding Prof. Grainger Stewart's case—in which, following injury to the head, there was optic neuritis—though he did not want to question the diagnosis, he had never seen this condition except where there was cerebral tumour or abscess. He had, however, seen permanent paralysis of accommodation following injury to the head, and since in this case the difficulty was especially in reading, it was probable that the condition might have been of this kind, and not optic neuritis.

Prof. Grainger Stewart explained that the account of the ophthalmoscopic observations had been obtained from Dr Argyll Robertson.

Dr Berry, continuing, said it was the experience of every one that optic neuritis was one of the most prominent symptoms of cerebral tumour. With abscess, on the other hand, he had been astonished to find that optic neuritis was extremely rare. With regard to the important localizing symptom of hemianopsia, he had seen a good number of cases in which injury to the back of the head had produced epilepsy and hemianopsia. He had also seen some cases in which, without injury, these two symptoms were present.

Dr Joseph Bell said he would like to say one or two words bearing upon individual experience of a considerable length of time. In the first place, he would be inclined to emphasize that they must now regard the operation of opening the cranium as not a thing in itself of any remarkable or great danger. He believed, and had always taught, that they trephined far too seldom. His own experience was that in cases of intra-cranial traumatism the results were, as a rule, exceedingly good if they succeeded in getting away pieces of bone that had been driven in, or if they opened any abscess and got free relief to pressure. He would put it in this way. They ought not to be afraid of the operation of trephining, and since the days of antiseptic surgery they should be still less afraid. Regarding middle ear-disease, he had seen a great deal of it lately in the small children brought to the Sick Children's Hospital. These patients were not able to tell them about tuning forks, and often not even about pain. He was not inclined to attack these cases from the aurist's side, but rather from the surgical point of view, and to cut down upon the mastoid antrum. His experience as to cerebral abscess in these cases was a very disappointing one. In the diagnosis of its existence they had most to be guided by the subnormal pulse and temperature. He did not lay much stress upon optic neuritis, except as a sign of cerebral tumour. Temporo-sphenoidal lesions were, he thought, much more frequent than cerebellar. If, however, a temporo-sphenoidal abscess was not found they should try for a cerebellar one. Most of the results were bad. There was relief only for a day or two. The pathologist usually found a great deal more in the cranium than had been expected,—complications of all sorts. The more he saw of such cases the earlier was he inclined to tackle them. Regarding microcephalus, after reading about Lannelongue's operation he had been anxious to try it. Two years ago he happened to have a case of the kind. It was a very small child with a small thick skull, and it was blind and deaf. It spent its time in having fits and crying. On this patient he performed Lannelongue's operation for the first time, he believed, in Scotland. He removed a large elliptical portion of the skull extending from the front to the back. The wound healed by first intention. The operation was followed by a fairly good result. The fits stopped and the crying diminished.

The child lived about a year, and then died of something else. A post-mortem was not obtained.

Dr James Carmichael said that he agreed with Dr M'Bride as to the extreme difficulty of localizing cerebral inflammation arising in connexion with ear disease, especially in children. He had always been strongly impressed with the fact that when there was abscess formation the temperature was usually subnormal. Indeed, he believed there was seldom a pyrexial temperature in children in cases of brain abscess. This also obtained with regard to collections of pus in other cavities in children, notably the pleura. As to the exact site of cerebral abscess there was little to guide us. In a case which he had had recently arising from ear disease, the temporo-sphenoidal region was cut down upon, but nothing was found. At the post-mortem an abscess was discovered in the cerebellum. In numerous cases of chronic hydrocephalus he had tried draining. The results, as regarded ultimate cure, were very bad, but in many cases there had been great relief to symptoms, and prolongation of life. The patients unfortunately were not usually brought to the hospital until the condition was far advanced, when the effusion had become so great as to cause atrophy of brain tissue, so that really recovery was practically precluded. He believed that if they could continuously drain these cases in the early stage, good results would be got. Regarding tubercular meningitis, from the physician's point of view they were in a perfectly hopeless condition. He believed, however, that the day would come when in certain of these cases surgical interference might be resorted to with benefit. A great many of them died rapidly from pressure due to intra-cranial effusion. When the brain was examined after death, frequently very little was found but effusion and extreme congestion, and often very little disease in other parts of the body. He therefore did not see why in certain very rapid cases, where the patient was believed to be otherwise healthy, they should not endeavour to relieve the pressure by surgical means. We knew that drainage of the peritoneum in tubercular peritonitis was not only a justifiable, but frequently successful operation, and if any perfect method of continuous drainage in brain cases could be found, good results might be expected.

Dr Dow said that he might give his first experience of cranial surgery. A man had a fracture over the temporal bone, and symptoms of compression of the brain followed. He cut down in order to remove the depressed bone. The man did well, except that a large piece of brain protruded from the opening. He did not know very well what to do with it, and after waiting a long time he thought that the best thing was to take it away, which he did. The wound healed up, and the man recovered quite well. He was very much interested to know if he had done his mind any harm, so he asked him if his memory was quite good? "Yes, it is as good as ever," replied the patient. "Is your mind as good as it was before, do you think?" "Yes, yes,—but I'm no jist sae fond o' the lassies as I was."

Dr Andrew Smart, continuing the discussion, remarked that as he was restricted to the subject of cerebral hæmorrhages of traumatic and non-traumatic origin, he would not refer to cases of trephining for epilepsy and alcoholic convulsions occurring in patients who had been under his care. To illustrate both types of hæmorrhage he would select a patient in whose individual case both conditions were probably represented, *i.e.*, an induced predisposition to hæmorrhage from chronic alcoholism, in which a comparatively slight blow on the head was followed by hæmorrhage at the base of the brain. The patient was a woman about 45, who was brought by the police to the Royal Infirmary in June 1890. She was then conscious, and answered questions intelligently. There was a contused wound on the right side of the head near the parietal eminence, where she had received a blow in falling. The face was drawn to the right, but without ptosis or ocular deviation. The pupils were medium-sized, and reacted fairly to light, but a careful examination of the eyes showed the existence of left lateral homonymous hemianopsia. She could not raise the left arm nor grasp with the left hand, the left forearm remaining flexed, and the fingers curving upon the palm. The thigh and leg movements were defective in a less degree; and the sensibility of both arm and leg, as also of the whole of the left side, was irregular and deficient. Speech was somewhat slurring, but not aphasic. Some hours after admission coma set in, and some hours later Cheyne-Stokes breathing supervened, and soon became so grave as to threaten life. Prof. Chiene, at his request, operated, first at the place where the blow had been received, and a second time further forward and a little lower. There was free hæmorrhage from the membranes, but no discoverable cause was found within reach of the director or finger to account for the symptoms. This confirmed the diagnosis that the hæmorrhage was at the base. The breathing, which before the operation was characterized by long pauses and almost suspended, had by the time the operation was completed become almost normal, and the patient began to regain consciousness. These results were especially noticeable after incising the dura, which was immediately followed by cerebral hernia, thereby affording more effectual relief to the cerebral pressure. The patient thereafter, as regards her intelligence and otherwise, continued to improve until the month of August of the same year, when she was discharged in full possession of her faculties; the hemiplegia above referred to continuing, with the addition that the left intercostal muscles and, apparently, the left half of the diaphragm were observed to be involved in the motor paralysis affecting the left side. In May 1891, eleven months after the operation, she was re-admitted for electro-massage treatment on account of the hemiplegia. In all other respects she was in excellent health, and in full possession of her mental faculties.

At this time Dr George Mackay, at his request, examined the eyes by the perimeter, the result showing the continuance of the hemianopsia. This was the first case on record of trephining for apoplexy at the base of the brain. [Dr Smart exhibited this woman (E. H.) at the adjourned meeting of the Medico-Chirurgical Society held in the hall of the Royal College of Physicians on Friday, 23rd February 1894, at eight o'clock P.M. She had travelled a considerable distance to be present. She appeared in excellent health, and in full possession of her mental faculties, four years, nearly, after the operation.] Dr Smart, referring to the general indications which he thought useful as a guide in trephining in traumatic and non-traumatic cerebral hæmorrhages, expressed his views in the following summary:—1. To operate at seat of hæmorrhage if localizing symptoms, and if nothing found, operate a second time on opposite side over area of counter stroke. 2. In cases of general hæmorrhage without localizing symptoms trephining would relieve pressure, and might, as in the case of H., save life. In such cases the more freely the dura was exposed and incised the more certainly would relief to pressure be given. 3. In cases in which there are symptoms of basal hæmorrhage, as in H.'s case, the nearer the operation was to the seat of lesion, and the greater the extent of the dura which it was safe and practicable to expose and incise, the greater would be the likelihood of affording effectual relief. 4. Those hæmorrhages arising within the substance of the brain or in its membranes, if extensive, were not usually accompanied by localizing symptoms, except in their earlier stage. 5. The rule for operating in traumatic lesions, with or without localizing symptoms, would equally apply to those lesions which belong to the non-traumatic class. 6. The primary object in operating being, by general consent, to relieve cranial pressure, why should we not operate in every case in which pressure symptoms were present, and more especially when they endanger life? Do the risks in such cases outweigh the possible benefits to be obtained by operating? 7. What we seemed to want at the present stage of cranial surgery were instruments more in keeping with our advancing knowledge in this department, by means of which we could more expeditiously expose a larger extent of dural membrane for rapid inspection and operation. In other words, the more completely we put the brain with its limiting sac, the dura, in the position of an external organ the more would we be able to accomplish results which we were at present scarcely in a position to realize. Supposing, for example, we could, say with the aid of an electro-rotatory saw or some such instrument, quickly remove the skull cap, leaving the dural membrane intact, the immediate effects of such procedure as assisting diagnosis and operative interference would be incalculable.

Dr Byrom Bramwell moved the adjournment of the discussion, which was agreed to.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING IV.

Wednesday, 14th February 1894.—Dr A. H. FREELAND BARBOUR, *President, in the Chair.*

I. The following gentlemen were elected Ordinary Fellows of the Society :—F. M. Graham, L.R.C.S. & P. Ed., Medical Mission Dispensary, Cowgate, and R. Hoggan, M.B., C.M., Montebello, Joppa.

II. *Professor Simpson* showed—(1.) An EXOMPHALIC FŒTUS sent by Dr Glanville Morris of Staneley, with a history of the case, which was read at a later stage of the meeting.

(2.) A FŒTUS WITH ANENCEPHALY AND SPINA BIFIDA, sent by Dr Lewis Morgan of Tonypandy. It had been produced by a woman 39 years of age, of nervous constitution, who had been married at the age of 19, and had already had eight healthy children and two miscarriages. This last pregnancy had terminated at seven and a half months, and at the labour about a gallon and a half of liquor amnii escaped.

(3.) A RIGHT-SIDED DERMOID OVARIAN CYSTOMA with twisted pedicle—the torsion being a left-twist, as Dr Hermann Freund had shown to occur normally in right ovarian tumours.

(4.) A HYDROCEPHALIC FŒTUS, sent by Dr Veitch, who found the arm presenting, and turned the child. The head was widely distended, but it burst when traction was applied to the limbs, so that it was extracted without much difficulty.

III. *Dr Haultain* showed an OVARY measuring 2½ inches by 1½, removed for pain, from a patient aged 31. On section it showed very distinctly several evident types of new growth, viz., an early multilocular cystoma, a small papillary cyst, and an area of white fibrous tissue (fibroma), all of which were situated in the cortical part of the organ, the medulla and hilum being to all appearances normal. There was also a well-marked recent corpus luteum, showing that in spite of the multiple changes going on, the organ was still functionally active. He had not yet cut the specimen for microscopic purposes, as he desired the Society to see the naked-eye appearance; the microscopic characters he would demonstrate at a future meeting. Perhaps the most interesting pathological condition present was the evident origin of the papillary growth in the cortex. The opposite ovary, though quite small, showed appearances of commencing papilloma.

IV. *Dr J. W. Ballantyne* showed a FŒTUS AFFECTED WITH SYMPODIA AND HYDROCEPHALUS, which he had received from Dr John Tod of Leith. A full description would be given at a subsequent meeting of the Society.

V. *Dr Berry Hart* read his paper on THE PATHOLOGICAL CLASSIFICATION OF DISEASES OF WOMEN, WITH A PLEA FOR THE REVISION OF CURRENT VIEWS.

Professor Simpson thought Dr Hart's paper was one of the greatest interest, and of quite exceptional value. There was great room for improvement in our views in various directions as to the pathology of the pelvic organs, and Dr Hart's paper would stimulate effort and guide the workers. The range of material brought forward was so large that it was difficult to discuss it fairly. It might almost be regarded as a synopsis of pelvic pathology. If he (Professor Simpson) might offer any criticism of Dr Hart's classification, he would say that it was too etiological to serve as a guide for teaching, or for a practitioner to keep in view who had to deal with the treatment of gynæcological cases. In classifying uterine atrophy, for example, it might as well have been classed under Class vi. B as under Class iii., and it seemed to him a simpler way of coming upon this condition to follow a scheme that dealt successively with the different anatomical elements of the sexual apparatus. Then, again, if the proposed scheme implied that the practitioner was to disregard all displacements of the uterus that could not be registered under vi. B, it would certainly lead to disappointment. For there were retroflexions of the uterus that in and of themselves, without any concurrent micro-organismic process, gave rise to such a definite and grave symptom as sterility, and the symptom disappeared when the uterus was simply replaced and kept in position. He (Professor Simpson) had seen too many cases of this sort to be prepared to have a condition that was sometimes congenital relegated roughly to the gynæcological rubbish-bin. Dr Hart's scheme laid great stress on the influence of micro-organisms in the causation of pelvic disease. This was only right in this bacteriological era, when so much light was thrown upon morbid processes by the study of micro-organisms and their products. It was of the utmost importance that their influence should be clearly traced in the sexual organs, and they must always have a prominent place in pelvic pathology ; but probably Dr Hart did not intend his scheme to be regarded as final.

Dr Haig Ferguson said he was sure the Society was very much indebted to Dr Hart for his valuable and suggestive paper. He did not think the classification was one at all suitable for teaching purposes, as it would tend to hopelessly confuse the student. The great value of this ætiological classification was the prominence given to micro-organisms as the primary cause of many pelvic diseases in women. He did not think this had been sufficiently insisted on hitherto either in teaching or in practice, and its importance was unquestionable.

Dr Haultain thought that Dr Hart made a great deal too much of the septic origin of Group vi. B., and he could not admit that some of the enlarged uteri which were displaced were due to septic causes, but more rather to altered circulation and consequent congestion. It might, therefore, be rather classed in the congestive group, if this had not been described as giving rise to rupture. Doubtless micro-organisms played a large part in the diseases of women, but their *rôle* as a cause of displacement seemed somewhat exaggerated. The paper was interesting from its novelty, and valuable as initiating a scheme of a more scientific classification of diseases of women than we at present had, and he was sure that the importance and size of the subject would give every one present plenty of food for reflection.

The President thought that Dr Hart's paper was one of the most suggestive that had been read to the Society for some time. It was a forecast of what would come to be the method of classifying diseases of women, when our knowledge was sufficiently advanced to classify upon an etiological basis. The progress of the knowledge of disease was from symptoms to pathology, and from pathology to etiology. Formerly, classification was based on symptoms; now, it rested on pathology; when our knowledge was more complete, it would be based on etiology. The title of the paper should have been an "Etiological," not a "Pathological," System of Classification. He agreed also with other speakers that we could not do away with passive congestion as a factor in uterine disease; that, for instance, persistent retroversion of the uterus during the puerperium was just as distinctly a cause of chronic metritis as was septic infection. He thought an important point in the paper was that the presence of cellulitis should not deter us in some cases from curetting the uterus; it was rather a reason for our doing so, in order to cut off infection. A paper of this nature was of special value to us as practitioners in directing attention to the etiology of disease; although for the student, in the present state of our knowledge, we must still keep to a classification based on pathological anatomy.

Dr Berry Hart had listened with great interest to the remarks of the Fellows. He had really written the paper for his own instruction, and as an attempt, the first made, he believed, to see how gynæcological pathology would comport itself under a pathological classification. It showed, at anyrate, the great gap in our knowledge. Professor Simpson was a little irate at the scant courtesy given in the scheme to the ordinary displacements of the uterus, but there was little doubt that the importance of such displacements had been tremendously exaggerated. As he had said in his paper, this classification was not for students, but for thinking pathologists. He was glad to have the President's approval in his attempt. At first the title of the paper was "Etiological Classification," but he had altered it to "Pathological" for reasons given.

VI. *The President* communicated a paper by *Dr F. C. A. Moss* on EXTRA-UTERINE GESTATION, and said—on the motion of Dr J. W. Ballantyne being carried "That a vote of thanks be sent to Dr Moss"—that he would gladly convey to Dr Moss the thanks of the Society for his interesting communication. He thought the second case, in which the fœtus was found in the abdominal cavity, was similar to one described by Dr Webster in his Thesis on *Ectopic Gestation*, and which he describes as tubo-peritoneal. He did not agree with Dr Moss that there would have been any advantage in delaying operation, but thought that the placenta should have been removed at the operation.

VII. *Prof. Simpson* communicated the following paper by *Dr Glanville Morris* on NOTES ON A CASE OF LABOUR WITH EXOMPHALOS OF THE FŒTUS :—

Mrs H., aged 30, ii.-para, residing at Tymelyn Hotel, Llanelly, was confined on September 13, 1893. Wife of an hotel proprietor. Married twice: first in February 1890, and again in January 1893.

General History.—Previous health: she has always been healthy and robust. Family health: her father is alive and well. Mother died after confinement. She has had four sisters, one of whom died of childbirth. There was nothing abnormal in the case of mother and sister.

Sexual History.—Menstruation began at the age of 16; was of the twenty-eight day type; duration, three to five days; quantity moderate. Date of last menstruation, February 13th to 17th. *Stirrage* was felt up to a day or so of her confinement.

Previous Obstetric History.—Pregnancy, one; this occurred in 1890. Labour was easy, lasting about six or eight hours; only child was born alive and healthy, but died of convulsions six months later. She has had no abortions.

Complications of Pregnancy.—She was subject to severe headaches, and intense neuralgiæ from time to time. A bloody discharge occurred at intervals from the vagina, bearing relation to excitement, fright, or violence during the ten days preceding her confinement. On the 31st of August she was frightened by some cattle; she jumped on a railing, and in four days after this she noticed a bloody discharge, which, however, was slight. Another day she was standing on a chair hanging up a picture. The chair gave way, and she fell; hæmorrhage came on again, but more fully than before. On other occasions bleeding would come on after some excitements, particularly on one occasion while she was serving at the bar. Sometimes the hæmorrhage would come on without any apparent cause.

Labour on September 13th, 1893.—Pains came on about twelve midnight. They were true in character, but recurring at long intervals, until about four o'clock, when they became severe and frequent. At this hour the midwife was sent for, who, on making a vaginal examination, ruptured the membranes, and felt a small loop which she thought was the umbilical cord.

At 8 A.M., finding her patient had made no progress, in spite of the pains being moderately severe and recurring at frequent intervals, she sent for me. On my arrival, fifteen minutes later, I made a vaginal examination and felt a loop, which I recognised as being altogether different to the feeling of a *normal* umbilical cord, but treating it as such I pushed it back. On further examination I found the os uteri was dilated to the size of a crown piece, and was occupied by a firm resisting body (the fœtal liver), with the loop (the bowel) on one side of it. Every pain was accompanied by a discharge of blood from the vagina, so I naturally concluded it was a case of placenta prævia, though I failed to recognise the characteristic feeling described on vaginal examination in such cases.

The abdominal walls were so thick that I was unable to learn anything on palpation regarding the position of fœtal parts, neither could I hear the fœtal heart on auscultation.

Anticipating the dangers of placenta prævia, I explained to the husband that the case was abnormal, and advised him to call in another medical man. Dr Evans was sent for at 9 A.M.

After a very careful examination he agreed with me in my diagnosis, allowing that there might be some abnormal pathological condition associated with it.

The general condition of our patient was favourable. Her pulse was good; no signs of exhaustion; and there was hardly any hæmorrhage by this time, so we decided not to interfere for an hour or so.

In the meantime, being afraid of the onset of a sudden and alarming hæmorrhage, I remained in charge of my patient, while Dr Evans left, returning at 10.30 with his obstetric bag.

After 9 o'clock the pains recurred only a few times, and were very slight.

Mode of Delivery.—The patient having been anæsthetized (chloroform was administered), the process of detaching the supposed placenta was proceeded with, when it was found that the mass was adherent above to the body of the child. This being the case, it was thought advisable to lay hold of one of the lower limbs, and traction being brought to bear upon it no difficulty was experienced in the delivery. The child was premature (eight months), and stillborn, and its peculiar appearance caused us great astonishment. The placenta was easily expressed by Credé's method. The uterus contracted firmly, and the hæmorrhage was very moderate. I may also mention that the liquor amnii was small in quantity. I washed out the uterus and ordered the nurse to use the vaginal douche with Condy's fluid three times a day for the first four days. I took her pulse and temperature twice daily, and the puerperal chart was that of a typically normal case.

The Attitude of the Fœtus.—The fœtus maintains permanently the habit which it had acquired in utero. The body of the fœtus is bent backwards, so that a normal ventral incurvature is replaced by a dorsal one, or, more correctly, a dorso-lateral one, as there is a twist in the spinal column in such a way that the right hip is nearly in apposition with the posterior border of the left scapula. The legs probably cross each other; the left limb (leg and foot) is much smaller than the right, which may be due to the pressure of the latter upon it (between it and the head). The forearms are flexed on the arms, and the hands are thrown back on each side of the head (the right more than the left), so that really the hands and feet are in close relation behind the occiput, the head being in the extended position.

Presentation.—This was peculiar, on account of the malformation. The extended head being the broad part of the fœtal ovoid, fitted into the broad upper part of the uterine ovoid. The soft projecting ventral mass being the narrower part, adapted itself to the lower part of the uterus, and therefore came first to present during labour.

Diagnosis.—The history of hæmorrhage and escape of blood with the pains, together with the feeling of the firm resisting mass occluding the os, made us think it was a case of placenta prævia. The presenting mass was so big that it was impossible to get our fingers beyond it so as to correct our diagnosis.

During delivery, the small intestines, having made their appearance as soon as the foot or lower extremity was outside the vagina, might easily be mistaken for a ruptured uterus.

The child was probably alive up to the day she was confined, and the cause of its death was (possibly) pressure on the abdominal organs and circulation during the labour and delivery.

The placenta became detached in the process of delivery.

The entire front of the abdominal wall is wanting from the thorax to the floor of the pelvis, so that the liver, stomach, and intestine, covered with their respective layer of peritoneum, are exposed. Is this brought about by an arrest in the development of the fœtus, or may it be due to an early morbid inflammatory process of a portion of the visceral surface of placenta? There is no anal orifice.

VIII. *Dr J. W. Ballantyne* communicated the following paper by *Dr D. D. Jennings*, New York, on THE OPERATIVE TREATMENT OF CRANIAL DEPRESSIONS IN THE NEW-BORN INFANT:—

On the 26th day of February 1893 I was called to see a child who had just been delivered by forceps. The left frontal bone was markedly depressed, presenting a concavity instead of the usual convexity. The deformity was so extreme that the father wished something to be done, at once, for its relief; but, in the absence of symptoms, I ordered delay, to give Nature a chance. Forty hours after birth, the head having assumed its normal outline, with no improvement in the depression, I operated, after unsuccessfully trying pneumatic suction, which has been successful in older children. The head having been made aseptic, a V-shaped incision was made over the centre of the depression; the periosteum was incised and stripped back sufficiently to apply the trephine. A button of considerable thickness was removed, the surrounding bone raised with an elevator, the button of bone returned, the wound closed with catgut sutures, and an antiseptic dressing laid on the head. The baby was soon quietly nursing at the mother's breast. The operation was simple, was done without an anæsthetic, and without shock; it was not necessary to tie a vessel; and the child nursed and slept well, and made an uneventful recovery.

Heretofore these cases have always been left alone, even when symptoms were present, trusting to intra-cranial pressure and the resiliency of the bone to overcome the deformity; but these cases do not always come right of themselves.

[Boissard (*Notes et observations cliniques*, Paris, 1892) records a somewhat similar case, in which a cranial depression with fracture of the vault was remedied by the use of the elevator. The whole subject of cranial depressions and fractures in the new-born is fully discussed in Lelièvre's work, entitled *Des Enforcements et des Fractures du Crâne chez le Fœtus*, published, with a good bibliography, in 1892.—J. W. B.]

Dr J. W. Ballantyne thought that Dr Jennings was justified in the treatment he had adopted. He (Dr Ballantyne) had recently dissected several still-born infants with cranial depressions, and had found meningeal hæmorrhage under the site of the depression.

ROYAL MEDICAL SOCIETY.

Feb. 9.—Dr Hutchison in the Chair.

Dr Orr showed a patient, æt. 1½ year, suffering from rapidly-growing Cystic Sarcoma of the left temporal and frontal regions. Beginning after a traumatism in July of last year, it now presented the appearance of a fluctuating swelling, about 2 in. by 1¾ in., separating the frontal and parietal bones on the left side from each other at the pterion. A remarkable feature was the absence of any "cerebral" symptoms. There was a secondary growth in the first phalanx of the middle finger on the same side of the body.

The discussion which ensued chiefly dealt with the question of diagnosis, Drs Watson, A. M. Easterbrook, and Leslie favouring the view that the tumour was a meningocele, and that the condition of the affected finger was strumous dactylitis. Mr Stewart considered the tumour to be a cirsoid aneurism. After a few remarks from Drs Mackay and Giles, Dr Orr replied, and gave his reasons for the diagnosis of cystic sarcoma with secondary growth.

Dr Watson gave a communication on a case of Heart Disease. Clinically the patient presented all the features of fatty heart with failure of compensation. On pathological examination, however, there was no myocardial disease nor sufficient endocardial disease to account for the condition. He referred to cases of a similar nature mentioned by Osler and others. The pathological specimen from the case was exhibited.

Mr Bowes moved a vote of thanks, and added a few clinical points noted by him in the case.

Dr Orr suggested that the heart had become weak owing to alcoholism on the part of the patient.

Dr Watson replied.

Dr Giles showed a specimen of Advanced Cancer of the Stomach, and briefly described the history of the case. The patient had suffered from vomiting for about four months, but symptoms of cancer were not marked till the last month. No tumour could be detected during life, but post-mortem a large ulcerating mass was found implicating the lesser curvature. There were no secondary growths.

Drs Leslie, Bell, and Watson briefly discussed various points in the case, and Dr Giles replied.

Dr Cattanach read his Dissertation upon Insomnia. After fully describing the condition of natural sleep, he considered the condition of loss of sleep—insomnia. Its causes and results were explained; and, in conclusion, the treatment, medicinal and otherwise, for the restoration of the sleep function was discussed.

Dr Leslie moved a vote of thanks.

Mr Garbutt gave some personal experiences of insomnia.

After a very full discussion by Drs A. M. Easterbrook, Giles, Mackay, Watson, and Messrs Hutton, Stewart, Balfour, Benson, Simson, and Bowes, the dissertation was accepted by the Society.

Feb. 16.—Dr Bremner in the Chair.

Dr Mackay showed a patient suffering from Double Ectropion resulting from cicatricial contraction of the scalp which occurred in childhood. The scalp had taken on an atrophic condition, and alopecia had resulted. In consequence of the exposure produced by the ectropion the eyes were becoming very much injured, and operative procedure was indicated. After describing various methods of operation, Dr Mackay decided that transplantation of a flap of skin from the patient's arm would be required in this case.

Dr Orr referred to temporary ectropion occurring in purulent conjunctivitis, and suggested plastic interference in this case by means of a V-shaped incision, and suturing of the edges of the resulting wound.

Mr Bowes suggested an oblique incision over the temple down towards the zygoma, then drawing the edges by their middle, and suturing in line at right angles to the incision, and, if necessary, closing the outer part of the palpebral fissure with sutures.

Mr Stewart suggested the transplantation of portions of a dog's skin on the exposed parts.

The President and Mr Briggs also spoke, the latter thinking that plastic operation without transplantation of skin was impossible, owing to the adhesion of scalp to the cranium.

Dr Mackay replied.

Mr Bowes showed a patient presenting Hypertrophied Heart, with a well-marked rough presystolic mitral murmur and a short blowing mitral murmur following the second sound. Presystolic thrill and accentuated pulmonary second sound were also present. The condition resulted from an attack of acute rheumatism two years ago.

Mr Montserrat moved a vote of thanks.

Dr Orr briefly referred to the presence and significance of reduplication of the second sound in the pulmonary area.

Mr Bowes replied.

Dr M'Carthy read notes of a case of Tetanus following Gangrene from Frost-bite. The patient, a surfaceman, æt. 62, was admitted to the Royal Infirmary suffering from gangrene of foot, the result of frost-bite. The line of demarcation was well marked. The foot was purified, and enveloped in corrosive wool powdered with iodoform and boracic acid. His general health was good, but on the morning of the second day he felt pain in the back of the neck. This gradually increased, and in the evening tenseness of muscles at the back of neck was very well marked. He could not swallow well, nor could he open his mouth sufficiently to protrude his tongue. Large doses of potassium bromide and chloral were given. During the night the condition rapidly became worse, and at 8 A.M. patient was quite unable to swallow. The muscles were very tense, and trismus and retraction of head and neck were very well marked. At 2 P.M. patient suddenly had a very typical tetanic spasm, after which breathing ceased, and patient appeared to be dead. Half a minute later, however, he gave a few deep gasps, and the arms became clonically contracted, after which he died. The temperature did not rise after death. The condition of the patient was too low to permit of operation when tetanus set in, and palliative measures—chloral and bromide in large doses—were relied on. Post-mortem examination showed only some congestion of the brain in the region of the fourth ventricle. Bacteriological examination failed to demonstrate the tetanus bacillus.

Dr C. C. Easterbrook moved a vote of thanks.

Mr Stewart referred to tetanus in horses, and asked why the limb was not amputated in this case?

Mr Greig thought chloroform should have been given during the spasms.

Drs Watson and Rainy, and Messrs Jones, Briggs, and Bowes also spoke.

Dr M'Carthy replied.

Mr Bowes read notes of a case of Hydramnios. There had been very rapid distention of the abdomen in the eighth month of pregnancy. The first stage of labour was very protracted; the membranes required to be ruptured, and an hour afterwards the child was born, apparently dead. Artificial respiration was employed for twenty-five minutes, after which the child lived for twelve hours. The mother made a good recovery.

Messrs Jones, Simson, and Stewart, and Dr C. C. Easterbrook spoke.

Mr Bowes replied.

Mr T. G. Dickson read his Dissertation on Rheumatism, its Etiology and Pathology.

Dr C. C. Easterbrook moved a vote of thanks, and thought that rheumatism was essentially a chemical disease, and not infective, as acute attacks could recur so often in the same individual.

Dr Orr mentioned some reasons in favour of rheumatism being associated with interference with the heat centre. He also referred to gonorrhœal rheumatism.

Mr Montserrat supported the chemical theory.

Mr Stewart said that there was a strong possibility of rheumatism being organismal in origin. He compared it with septicæmia and malaria, and said that its non-contagious nature was similar to malaria.

Dr Watson and Mr Simson also spoke.

Mr Dickson replied, and the Society accepted the dissertation.

Feb. 23.—Dr Hamilton in the Chair.

Mr Bowes showed a Patient to the Society, and read notes of his case. The right third cranial nerve was paralyzed in all its branches, but not completely. The condition had been well marked, but the effects were slowly passing off, so that there was merely defective action of the muscles supplied. The cause of the condition was probably neuritis of the third nerve due to specific disease.

Dr Orr, in moving a vote of thanks, drew attention to the signs of the affection passing off, and mentioned the question of this disease being due to a peripheral or central cause, and its relation to ophthalmoplegia externa.

Dr Mackay seconded the vote of thanks.

Mr Bowes replied.

Dr Orr showed two Pathological Specimens—(*a.*) A broad ligament Hæmatoma removed from a woman æt. 28, whose previous obstetric and clinical history and symptoms resembled those of extra-uterine gestation at the third month. Abdominal section was performed, and the tumour removed. The patient made a good recovery. The hæmatoma was globular, about the size of an orange, and of the consistence of a soft solid. (*b.*) A Kidney affected with Carcinomatous disease. This was removed from a woman, æt. 58, by a large transverse lumbo-abdominal incision. The organ was about three times its natural size, slightly irregular in shape, smooth, and with cystic degeneration in various parts. The patient, before operation, was extremely exhausted and anæmic, and had a large swelling in the right lumbar region, somewhat fixed to its surroundings, and not influenced by respiration. A tympanitic note was obtained on percussion of the anterior aspect of the abdominal swelling. There was some continuous hæmaturia, but little pain. The patient died of protracted shock on the sixth day after operation, though she passed 36-50 oz. per diem of clear non-albuminous urine. *Post-mortem.*—The abdominal wound had healed, the pedicle was secure, and the other kidney was healthy. There was a great amount of epicardial fat.

Mr Bowes and Dr Watson moved and seconded a vote of thanks, and Dr Orr replied.

Mr Montserrat read his Dissertation upon Heredity. He said that the science of heredity is modern, and that it has been discussed by all modern biologists, who may be roughly divided into two schools. Weismann's theory claims the greater number of disciples; it includes a physical hypothesis, the fundamental of which is the continuity of the germ-plasm. Some great authorities in biology reject his theory altogether. After briefly criticising the conflict between the two schools, Mr Montserrat considered the subject of hereditary disease. This is always of the nature of a tissue change or predisposition, which includes both the gross and finer malformations. They have their origin in germinal variation. The human species is specially subject to variability, and so to hereditary disease. The subject is imperfectly worked out, but there are certain "laws" of transmission.

Drs Giles and Mackay moved and seconded a vote of thanks, and the following members spoke: Messrs Stewart, Taylor, Balfour, Simson, Bowes, and Dr Orr. Mr Montserrat replied, and the Society accepted the dissertation.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By WILLIAM CRAIG, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

CHLOROBROM IN SEA-SICKNESS.—Hutcheson (*The Lancet*, Aug. 12, 1893) states that he used chlorobrom in all cases of sea-sickness to which he was called while ship's surgeon to the steamship "Rimutaka" during a voyage to and from New Zealand, and speaks of its action as follows:—He always gave it in three-drachm doses in the second stage of this distressing ailment when retching, headache, depression, and sleeplessness were the prominent symptoms, the hour selected for administration being 10 P.M., in order to secure a good night's rest. The results were very satisfactory. The chlorobrom was always retained, and was always followed by sleep (generally sound). The patients awoke much refreshed in the morning, with an appetite, and able (except on one occasion) to eat and retain something light.—*The Therapeutic Gazette*, December 15th, 1893.

THE ULTIMATE FATE OF ARSENIOUS ACID IN THE ANIMAL ORGANISM.—Severi (*Rif. Med.*, 9th and 10th November 1893) has dealt with this question in a series of experiments, the results of which he now details. His conclusions are as follows:—(1), Arsenious acid administered hypodermically to the dog in such doses as to produce acute poisoning is eliminated for the most part unchanged in the urine; (2), the elimination of arsenites begins immediately after the injection, is greatest during the first few hours, and continues for three or four days at the most; (3), even in cases in which small doses are given daily, no traces of arsenites are discoverable in the urine; (4), in cases in which rather large doses are given daily for ten or twelve days, the elimination of arsenites goes on for somewhat longer than stated in the second conclusion.—*British Medical Journal*, January 13th, 1894.

THE EFFECTS OF ANTIPYRIN ON CERTAIN FORMS OF ATROPHY OF THE OPTIC NERVE.—Valude (*Annales d'Oculistique*, September 1893) contributes an article on the effects of antipyrin in the treatment of optic nerve atrophy, and believes that this drug, by reason of its peripheric vaso-motor action, may have a favourable effect in certain forms of this disease which arise from a vascular change in the connective interstitial tissue which constitutes the stroma of the optic nerve. The drug, therefore, will act in atrophies consequent upon ascending or descending neuritis, excepting in tabetic grey atrophy, atrophic from compression, where the nervous fibre is radically degenerated. He thinks that subcutaneous injections are the least apt to cause gastric troubles, and uses a strong solution, 1 gramme of antipyrin to 2 grammes of distilled water, to which he adds a little cocaine. Every two days he administers 1 gramme, then 2 grammes,—that is to say, 2 or 4 grammes of the liquid. He has never seen, with proper precautions, inflammatory symptoms follow this treatment.—*The Therapeutic Gazette*, Dec. 15th, 1893.

SALOL IN PHTHISIS.—Lutz (*Fortschritte d. Medizin*, No. 23, December 1893) refers to the frequent failures after the adoption of new remedies for the treatment of phthisis, and proceeds to describe a method he has now successfully employed during more than two years. It consists in giving the patient about 1½ drachm of salol daily, the single dose being 20 to 30 grs. Latterly it was found that 6 to 7 grs. per diem sometimes suffice to give similar results, and the powder is recommended to be given in capsules or wafers. The reactions of salol were found in the urine eight days after discontinuance of the drug. Care is required at first, and renal disease contra-indicates its use. Occasionally nausea, aural symptoms, etc., are produced. The action of the drug is most obvious in phthisis florida, and details of some twenty cases are given. Cases with high fever and much expectoration at first show no amelioration; later, however, pyrexia and night-sweats disappear totally, this occurring in from several days to one or two weeks. The relative proportion of bacilli is not changed, but the sputum, as remarked by the patients, becomes less, many having difficulty in expectorating a sufficiency for examination purposes. The cough also diminishes. Salol, in the author's opinion, appears to lessen disintegration of tuberculous material, but he does not attribute to the drug an antituberculous action, thinking that the antibacterial complications only are influenced, and that a mixed infection is thus converted into a slower and purer tuberculous process. For instance, increase of local pleurisies, and consequently probably extending infiltration, continued while actual destruction appeared to diminish. Even in severe cases the drug is of use, and should be tried; in one patient, where death appeared imminent, life was prolonged for more than a year, showing that salol is most useful in ameliorating the patient's condition.—*British Medical Journal*, February 3rd, 1894.

THE ACTION OF SHEEP'S BRAIN EXTRACT ON ADULTS AND CHILDREN.—Moncorvo (*Bull. Gén. de Thérap.*, November 29, 1893) during the last year has used extract of sheep's brain on thirteen children from 2 to 10 years of age, and in five adults at variable periods of life. In the case of the former 187 l.-g. injections, and in the case of the latter 196 injections (generally three to five at one sitting), were made almost invariably into the intra-scapular region, the interval of time being two to four days. Owing to the precautions taken, no local ill effect attended any of the operations. The cases comprised various forms of syphilis, tuberculosis, hysteria, and nervous lesions. The result was most satisfactory, the improvement manifesting itself in increase of appetite and strength, restoration of sleep, healthy complexion, and normal body-weight. Slight excitement sometimes occurred at first, lasting a day only. The preparation was always previously examined with care for the absence of bacteria. In order to exclude the possibility of suggestion in the achievement of the above results, an adult patient was left in ignorance of the nature and object of the injection; moreover, the age of several of the children excluded such a possibility. In conclusion, the author regards this extract as a valuable aid in the treatment even of weakly children.—*British Medical Journal*, February 3rd, 1894.

TREATMENT OF CHRONIC GASTRIC ULCER.—Stepp (*Therap. Monats.*, November 1893) describes a method which he has successfully followed during the last four years, the object of which has been to prevent fermentative changes in the organ with their damaging influence on the gastric walls, and, further, to exert a beneficial and tonic action on the damaged surface. This he has effected by the frequent use of a ⅔ per cent. aqueous solution of chloroform, with the addition of subnitrate of bismuth, the latter, however, being of secondary importance. The water is given in quantities of one to two bottles daily. The author says chloroform has no anodyne or narcotic properties when administered internally, its effects being more those of an astringent, a tonic, and an antiseptic. A few cases are recorded showing how early the patients became convalescent under this treatment. When vomiting or hæmatemesis complicated the affection, the author found the chloroform acted effectually in quenching thirst, and arrested nausea and hæmorrhage. A burning sensation, probably at the seat of the ulcer, is always produced at first, but disappears completely in eight to ten days. No unpleasant consequences occurred, but indirectly a clean tongue and improved appetite seemed to be produced. At the end of the second week, beef-tea could be administered; during the third, eggs; and afterwards selected meats could generally be added to the preceding foods.—*British Medical Journal*, January 27th, 1894.

PETROLEUM IN DIPHTHERIA.—P. J. Kostenko (*Vratch*, No. 50, 1893, p. 1383) fully confirms Flahaut's high opinion of petroleum as a remedy for diphtheria. The author's experience includes seven consecutive cases, all of which were treated by painting the fauces with cotton wool soaked in pure petroleum, the procedure being repeated thrice daily. Rapid recovery invariably ensued, the false membranes disappearing within three days. It appears that the Russian peasantry successfully treat severe cases of diphtheria by the internal administration of petroleum. The substance is perfectly innocuous, even when swallowed in large doses (400 grammes at a time). It never causes local pain or burning.—*British Medical Journal*, February 10th, 1894.

LILAC IN MALARIAL FEVER.—Mesiatzeff (*Vestnik Obshtchestvennoi Highieny*, etc., December 1883) successfully treats malarial fevers by an infusion made of about six fresh leaves of the ordinary lilac (*Syringa vulgaris*) to a cupful of hot water. Two cupfuls should be given daily until the cessation of paroxysms, and one cupful for two or three days afterwards.—*British Medical Journal*, February 3rd, 1894.

ATROPINE AND MORPHINISM.—Koch (*Therap. Monats.*, November 1893) records the case of a patient who frequently indulged in morphine, and to whom on five occasions he administered subcutaneous doses of atropine as an antidote. It always quickly arrested the profuse secretion from the skin, air passages, and intestine, also considerably diminishing unpleasant results due to the abstinence from morphine, and thereby assisting gradual discontinuance of the narcotic. One three-hundredth part of a grain of the sulphate should be given at first, the patient being watched for several hours. A second dose may be administered if necessary.—*British Medical Journal*, February 3rd, 1894.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

The Question of the Communicability of Leprosy.—Dr Beaven Rake, after a careful analysis of all the literature bearing on the subject in recent times, thus sums up his conclusions:—1. Bacteriological evidence. Leprosy is probably due to a bacillus, and theoretically we must admit the possibility of its inoculation. 2. Inoculations of animals. The experimental inoculation of leprosy in man or animals has never succeeded beyond the possibility of doubt. 3. It has not been proved that vaccination has conveyed leprosy. 4. While practical experience points to a possible communication of the disease from one person to another, the weight of evidence shows that this must be extremely rare, and under very exceptional conditions. 5. Leprosy has steadily decreased in many countries without any attempt at compulsory segregation, while in other places it has increased in spite of isolation of lepers. 6. The immigration of lepers into leprosy-free countries has not, in recent times, been followed by any appreciable spread of the disease. 7. For practical purposes leprosy may be regarded as less dangerous to the community than tuberculosis, and as requiring no greater precautions than those taken against the spread of that disease.—*New York Medical Record*, 2nd Dec. 1893.

The Use of Kristaline in Dermatotherapy.—Dr Leslie Phillips has directed attention to the employment of kristaline, a proprietary lacquer manufactured in America, but procurable in Britain, as a substitute for collodion. It is a solution of pyroxylin in wood-naphtha, containing amyl acetate. It is used as a varnish to protect metal ornaments from corroding. It evaporates when applied to the skin more slowly than collodion, but produces a transparent, flexible, and durable film. The pungent odour, due to the contained amyl salt, is a disadvantage. It can be made flexile as collodion, thus:—Kristaline, 12·0; Canada balsam, 0·50; Castor oil, 0·25; but for many conditions the proportion of castor oil may be advantageously augmented. A useful skin-coloured enamel may be thus prepared:—Kristaline, 7 drachms; Castor oil, 1 drachm; raw umber, 2 grains; red Arminian bole, 1 grain; Zinc oxide, 40 grains; Calamine, 20 grains. As a practical illustration of its use he cites those cases of acne in which a large number of spots are placed close together; such are readily cured by the following procedure:—Over the whole affected region brush lysol, and allow it to remain on for two or three minutes. Remove by dabbing with blotting-paper. Now cover the part with a thin layer of kristaline, applied by means of a penholder or stick. The advantage of lysol over carbolic acid or other caustics is that it produces a hyperæmia only, while the film formed by the kristaline is quite invisible. Unless friction is used, this film will last nearly a week, at the end of which time the disease will be found much improved. The process should then be repeated, and it will be seldom needful to again renew. Kristaline is exceedingly useful to insulate part of an electrolysis needle when it is desired to confine the electrolytic action to the deep tissues, and to prevent injury to the skin through which the puncture is made. If kristaline is allowed to run over a sheet of warmed glass it dries into a beautifully thin film, as homogeneous and transparent as glass. This forms a most admirable protective for wounds, or can be used as a cover, through which progress can be observed. The film is secured by painting a line of kristaline on the skin which fixes the film. It can also be used for tracing with ink.—*British Journal of Dermatology*, Oct. 1893.

RECOVERY FROM LEPROSY.—Mr Hutchinson has recorded some remarkable and interesting examples. Residence in England, and entire abstinence from fish as an article of diet, are, in his opinion, the chief, if not the only elements concerned in the cure of these cases. On carefully investigating his cases, however, it would seem that all the symptoms had not quite disappeared, for anæsthesia, or at least some lessening of sensation, remained, though a cessation of active progress was apparent.—*Medical Press and Circular*, 29th Nov. 1893.

THE NATURE OF XANTHOMA.—Török of Buda-Pesth has made an exhaustive investigation into this question. Three species are recognised—Xanthoma vulgare, xanthoma elasticum, and xanthoma diabeticorum. The first form may be divided into two varieties,—1, Localized xanthoma, which appears in one or more flat spots, or spots very little raised, more rarely as papules and tubercles affecting a single region, most frequently that of the eyelids; [illegible] disseminated or multiple xanthoma, which may be flat, tuberculated, or tumiform, and extends over the whole surface of the body, though with certain points of election,—the knees, elbows, palms, soles, fingers, neck, etc. A separation has been made between cases of xanthoma occurring before puberty and those manifesting themselves in adult life, but Török shows that there can be drawn up a continuous chain, commencing in the first year and unbroken to the sixtieth. Jaundice and liver disease have been met with at all ages. Xanthoma of the eyelids may appear in childhood, and the complaint starting there may spread over the body. From an analysis of the histology, he concludes that xanthoma vulgare is made up of adipose tissue in a heterotopic situation, and in consequence of this it is composed of adipose cells interrupted in their progress to complete evolution. Where there is an increase of fibrous tissue the formation of this is additional to that of adipose. We cannot at present come nearer the cause of xanthoma than to assume that it arises through a proliferative hyperactivity of cells suited to undergo the fatty transformation. Xanthoma should not, he thinks, be regarded as a tumour, but as an excess of growth. The two cases of xanthoma elasticum he considers are not to be referred to a distinct variety, but are xanthoma vulgare planum in a condition of retrogression. Xanthoma diabeticorum he describes apart, as clinically and histologically an irritative process tending to degeneration. There are the redness of the lesions at their commencement, their sudden evolution, the accompanying subjective sensations, the transformation which occurs in the centre, the fact that they have been seen to ulcerate or give rise to cicatrices, their disappearance in course of time. There are, he considers, inflammatory phenomena not seen in xanthoma vulgare. The lesions of xanthoma diabeticorum are caused locally by an irritative process ending in a granulo-fatty degeneration.—*Annales de Dermatologie et de Syphiligraphie,* Nov. and Dec. 1893.

OCCASIONAL PERISCOPE OF THE DISEASES OF CHILDREN.

By Chas. E. Underhill, B.A., M.B., F.R.C.P. Ed.

Dangers of the Cold-Water Treatment of Pneumonia in Children.—In discussing the use of baths in the treatment of pneumonia, the author dismisses *cold* water as too depressing and dangerous, and disagrees entirely with the *dictum* of Jacobi, that "The best antiseptic is cold, and the *rationale* of cold bathing is the cooling of the surface." The true *rationale* of cold bathing is the effect upon the nervous system, which is invigorated and braced by it, not the reduction of temperature. While objecting to *cold* baths, he advocates strongly the employment of *cool* bathing—the bath at 90° to 95° Fahr. reduced slowly to 80°. This he has found the most effectual of all methods of treating pneumonia with high temperatures and embarrassed respiration in children. An interesting case in point is recorded.—Simon Baruch, M.D., *Arch. of Pediatrics,* July 1893.

The Local Lesion of Scarlet Fever.—Scarlet fever differs from some of the other specific fevers—measles, for example—in that it only attacks a limited portion of the population—something well under 5 per cent. This is mainly due to the fact that the liability to its attacks diminishes rapidly after ten years of age, and almost ceases after the age of fifteen. As a reason for this immunity Dr Dowson undertakes to show that—1. The primary local lesion of ordinary scarlet fever is in the tonsils. 2. This disease is a local disease of these parts and associated lymphatic glands, the general symptoms being caused by the absorption of toxines produced by the microbic growth at the local lesion. 3. The incidence of the disease and the subsequent immunity are related to the structure and life-history of the tonsils. After satisfying himself as to the appearance of the normal tonsil—not an easy matter—the author's observations led him to the conclusion that the tonsillitis associated with scarlet fever is not usually symptomatic, but a destructive inflammation, sometimes slight, but always definitely marked; that it is invariably present, is the first sign apparent to both patient and observer, and that it is directly proportional to the other associated features of the disease. It is absent only in those cases where there is reason to believe the local infection takes place in an unusual situation, as in surgical and puerperal scarlet fever; that it leaves in the tonsil a permanent lesion; that people who have normal tonsils have not suffered from scarlet fever; that the immaturity of the tonsils at birth, their development in early childhood, the onset and establishment of puberty acting by way of the tonsils, and the atrophied condition of these organs after the age of thirty, control to an important extent the incidence of this disease. —W. Dowson, M.A., M.D., *The Medical Chronicle*, January 1894.

INVESTIGATIONS INTO THE INCREASE OF LENGTH AND WEIGHT OF CHILDREN.—To arrive at the true facts in relation to the growth of children in length and in weight is a far more difficult task than at first sight appears. These factors are exposed to so many variations, due partly to differences in methods of feeding, station in life, climate, seasons of the year, and even the time of day at which the measurements are taken; and partly to the conditions of size at the time of birth. In an elaborate paper, full of tables and charts, worked out with thoroughly German minuteness, the author gives the results of a large number of observations of his own, and compares them with those obtained by well-known authorities, such as Vierordt, Fleischmann, Raudnitz, and others. One of his most striking facts is, that at the end of the first year all the children who were above a certain minimum weight at the time of birth have gained nearly the same amount in weight, whatever may have been the nature of their food. For those who take a special interest in this subject the paper will repay a careful study. —W. Camerer, M.D., *Jahrb. für Kinderheilk.*, Bd. xxxvi., H. 3-7.

SCURVY IN CHILDREN.—This disease is not a very common one, and, owing to its almost constant association with rickets, is apt to be misunderstood when it does occur, yet the symptoms are distinct enough: a gradually increasing debility and listlessness, profound anæmia, fretfulness and irritability, loss of power in the lower limbs, with severe pain in them. These are followed by effusions of blood under the periosteum of the long bones, sometimes of the orbit, and occasionally in those of the cranium. Swollen and bleeding gums in children who have or are cutting teeth, with hæmorrhages from mouth, nose, bowels, and kidneys, complete the picture. The author reports two cases of his own, and gives some interesting statistics from upwards of twenty cases which he has gathered from various sources.—G. A. Sutherland, M.D. Edin., M.R.C.P. Lond., *Practitioner*, February 1894.

THE MEDICAL CARE OF CHILDREN.—This little paper, which was delivered as the opening address at the first meeting of the Dublin University Biological Association this session, is well worth reading by those practitioners and students who have, or hope to have, the care of children. There is nothing new in it, but the author points out in a vigorous, and sometimes humorous fashion, the difficulties which crop up in the diagnosis and treatment of disease in children, and the best way to meet them. The two great essential attributes of a good children's doctor are patience and observation; and "manner" is an indispensible requirement. He shows how much can be gained from observing the expression, features, attitude, cry, method of taking food, respiration, etc., and then deals with physical examination, temperature, clothing, and food. It is full of useful hints for students and young practitioners. —H. C. Drury, M.B., F.R.C.P., *Dublin Journ. of Medical Science*, January 1894.

CONTRIBUTIONS TO THE POLYMORPHISM OF DIPHTHERIA OF THE PHARYNX.—The dangerous relationship which exists between cases of follicular tonsillitis and diphtheria has long been a bugbear to the practitioner of medicine. It has long been known that the former occasionally appears to be infectious and to occur in epidemics, and also that one may see diphtheria of the larynx along with a follicular tonsillitis which shows none of the appearances of true diphtheria. In 1884 Jacoby enunciated the statement that the majority of cases of follicular tonsillitis occurring in adults are caused by the poison of diphtheria, and this opinion gained many supporters. In 1889, for the first time, Löffler discovered the bacillus of diphtheria. But as it is only given to the few to make bacteriological investigation of their cases, the difficulty of diagnosis for the general practitioner still remains. An outbreak of diphtheria occurring in an orphanage for girls at Buda-Pesth gave an opportunity for observing the multiform character of the disease. Out of a total of 102 girls between 6 and 16 years of age, 35 contracted the disease, and were removed to a hospital; 19 more were affected so slightly that they were treated in the institution. The 35 cases are classified in three groups. Group 1, in which the throat showed unmistakable diphtheritic membranes from the outset; they were 20 in number. Of these, 4 died, and 3 were followed by paralysis. Group 2—cases in which the appearances at first were those of pure follicular tonsillitis, the diphtheritic membranes appearing while they were under observation. In some of these cases the disease spread to the nasal mucous membrane, and one was followed by paralysis of the throat; they were 4 in number. Group 3—cases in which the appearances from beginning to end were those of follicular tonsillitis; these were 11 in number. Several of these cases were unattended by fever. Short notes of all the cases are given.—Dr Koloman Skego, *Jahr. f. Kinderheilk.*, Bd. xxxiv., H. 2.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S.

The Treatment of Syphilis with Sulphate of Copper.—In the *Medical Record*, Feb. 3, 1894, Dr A. F. Price gives the histories of some cases of constitutional syphilis treated in this manner, and the following are his conclusions:—1. Copper exercises a specific action in syphilis, which is especially directed toward the lymphatic system. It is for this reason more radically curative than mercury. 2. It is slow in removing the skin symptoms of the secondary stage. 3. It prevents the development of mucous patches and throat symptoms. 4. It is a very active drug, and it is wise to omit its use one day in a week, and sometimes more frequently. The signs of its excessive and injurious action are first a voracious appetite, and this is rapidly followed, if the dose is not reduced or the drug temporarily discontinued, by prostration, giddiness, pallor, and a rapid and weak pulse. 5. The average dose of sulphate of copper is $\frac{1}{30}$ of a grain thrice daily. It is better to give it with the sulphate of iron. It can be given either in pill or solution. 6. This dose is absolutely dangerous in cases of syphilitic cachexia. It produces at once excessive and alarming prostration. If a sufficiently small dose of the drug is given at first, a tolerance of it is gradually established, so that the average dose may in time be obtained. He is inclined to think that in some cachectic cases as small a dose as the $\frac{1}{10000}$ of a grain may be necessary, given once daily. The use of iron, arsenic, and iodide is also usually necessary in old syphilis.

Circumcision: Its Advantages, and How to Perform it.—In a pamphlet by Mr M. Clifford, published by J. & A. Churchill, 1893, the evils brought about by the existence of a long prepuce are thus stated:—1. In infancy it causes constitutional as well as local irritation, and many a child, at one time puny and sickly, has quickly thriven and become robust when the foreskin has been removed. 2. In boys the natural secretions of the part, smegma and so forth, are liable to accumulate between the prepuce and the glans penis, and balanitis is frequently met with as a result. 3. If a sore occurs underneath the foreskin, phimosis is a common consequence, often necessitating circumcision before proper treatment can be undertaken. Phimosis is also met with as a congenital condition, and is found to exist in a great many children who are born apparently healthy in every respect. It may be quite unsuspected until, either by chance or on account of some trouble which has arisen about the penis, it is found that the prepuce cannot be drawn back over the glans, or if it be possible, it cannot be effected without much difficulty nor without inflicting great pain. Such a condition favours the retention of the secretions of the part, and leads to one or other of the diseases here mentioned. 4. A long foreskin is a mechanical impediment to the passage of urine, and sometimes gives rise to symptoms resembling those of stone in the bladder. 5. It is a frequent cause of incontinence of urine at night. 6. The straining to pass water, which its presence occasions, is one of the recognised causes of hernia, and it has been known to be a cause of prolapse of the rectum. 7. Paraphimosis is another condition brought about by a long and tight prepuce. In this case the foreskin has been drawn back, and become fixed in the furrow at the back of the glans penis. 8. The prepuce tends to keep the surface of the glans penis moist and wet, and, unknown to the individual, little cracks and fissures are liable to occur on and around it. These may be easily inoculated by any noxious or contagious matter to which they may be exposed. Hence they are often the starting-point of chancres or syphilis in young persons, and of cancer in the aged. 9. Circumcision has been performed and found beneficial in some constitutional diseases. It has been advocated in hysteria, epilepsy, chorea, etc., and medical literature every now and then calls attention to the value of the operation. 10. Circumcision is conducive to cleanliness, inasmuch as the natural secretion, smegma, etc., which always collects under the prepuce, cannot be retained, and the part is kept clean in the ordinary course of the day's ablutions without entailing any extra trouble or attention.

THE RELATION OF SYPHILIS TO GENERAL PARALYSIS.—Peterson (*Med. Record,* December 9th, 1893) in dealing with this subject refers to the great attention that has been directed to it in recent years, and quotes a list of twenty-two writers, with the percentage frequency of syphilis found by them in their cases of general paresis. The numbers therein stated range from 17 per cent. (Kaes) to 70 (Savage), 76 (Mendel), and 88 per cent. (Bannister). The author's own investigations in forty recent cases of general paresis showed that ten of the patients were definitely syphilitic, twelve were non-syphilitic; in the remaining eighteen the point was not determined. From examination of all the available data he concludes that a history of syphilis is found in about 65 per cent. of general paralytics; he notes further that antecedent syphilis is about eight times more frequent in paralytic dementia than in other forms of insanity. As to the etiological relationship between the two diseases, Peterson considers that syphilis does not act as a direct cause in the production of general paresis, but by its pernicious constitutional effects it renders the nervous system more vulnerable to the operation of alcoholic and other excesses. He mentions that among the native Egyptians syphilis is one of the most widespread disorders, yet no case of general paresis has hitherto been reported, nor was there any case in the Asylum at Cairo when visited by him a few years ago—an immunity that he thinks may be attributable to the prevailing abstinence from alcohol.—*British Medical Journal,* January 20, 1894.

SYPHILIS AND DISEASE OF THE SPINAL CORD.—Gerhardt (*Berl. Klin. Woch.,* 1893, No. 50) says that syphilitic disease of the spinal cord may follow in from three months to twenty years after primary syphilis. He advocates thorough and continued antisyphilitic treatment as soon as the diagnosis is made. In syphilis of the spinal cord the meninges and vessels are chiefly affected. Amongst the clinical varieties a certain irregularity in the symptoms, with paraplegic symptoms which are predominant on one side, tending to the form of paralysis described by Brown-Séquard, should direct the attention to syphilis. Cerebral symptoms are frequently associated with the spinal symptoms, and Gerhardt regards what may be termed a "triplegia" as characteristic of a syphilitic origin. This triplegia is due to the combination of a paraplegia of spinal origin with a hemiplegia of encaphalic origin. Vascular disease associated with disease of the meninges may show itself by sudden exacerbation of the spinal symptoms, or by a sort of spinal apoplexy, with sudden onset of complete paraplegia. To illustrate this he mentions the case of a tabetic man who denied syphilis, but in whom later on a definite history of syphilis was obtained; this man, in the course of an hour, developed complete paraplegia, and his sphincters were affected. Under energetic antisyphilitic treatment these symptoms completely disappeared, and only his earlier tabetic symptoms remained. Speaking of other clinical forms, Gerhardt expresses the opinion that various symptoms, such as partial anæsthesia of the trunk, paralyses of rarely affected trunk muscles, and herpes zoster, when associated with other symptoms, may be attributed to the nerve roots being affected. He mentions also two rare cases in which the spinal cord was affected by syphilitic disease of the vertebral column, and thinks that in such cases the cervical vertebræ are the ones most usually affected. As regards the connexion between syphilis and tabes, Gerhardt states that his cases of tabes in the last eight years number 102, and that in exactly 50 per cent. a history of previous syphilis could be obtained. This accords with his previous experience at Würzburg. A few cases of tabes, he thinks, are really benefited by antisyphilitic treatment, and this is most likely to occur if the patient is well nourished, if comparatively little time has elapsed since the primary syphilis, if the patient still shows signs of undoubted syphilis, and especially in the so-called "atypical cases of tabes." Of the latter class, however, he allows that some may be termed cases of "pseudo-tabes," and be due to a true syphilitic lesion in the posterior columns of the spinal cord.—*British Medical Journal*, January 20, 1894.

Part Fifth.

MEDICAL NEWS.

Institute of Chemistry.—The Eighth Annual General Meeting of the Institute of Chemistry of Great Britain and Ireland (Incorporated under Royal Charter), was held on Thursday, March 1st, at the offices of the Institute, 30 Bloomsbury Square, London, W.C. Dr W. A. Tilden, F.R.S., the retiring President, delivered an address, in which he referred to the progress of the Institute during the three years of his presidency. The register contains 738 Fellows, 109 Associates, and 207 Students. The Officers and Council for the ensuing session were elected,—Dr W. J. Russell, F.R.S., of St Bartholomew's Hospital, succeeding Dr Tilden as President of the Institute.

List of successful Candidates for Commissions in the Medical Staff of Her Majesty's Army at the recent Examination in London.

Order of Merit.	Names.	Number of Marks.	Order of Merit.	Names.	Number of Marks.
1.	Evans, P.,	2849	6.	Milner, A. E.,	2360
2.	Silver, J. P.,	2462	7.	Sweetnam, S. W.,	2360
3.	Buist, J. M.,	2391	8.	Dove, F.,	2345
4.	Vaughan Williams, H. W.,	2390	9.	Morgan, C. K.,	2282
5.	Walker, J.,	2365	10.	Thom, G. H. C.,	2178

The Liquor Carnis Company.—We are informed that Messrs Raimes, Clark, & Co., Leith Walk, are agents for this Company's preparations as well as Messrs Duncan, Flockhart, & Co., Edinburgh, and hold samples at the call of medical men.

"King Johannis."—We learn from one of our London contemporaries that among the leading prize winners at one of Sir Augustus Harris's popular Covent Garden Fancy Dress Balls lately, "King Johannis" made his appearance in a remarkable dress, and that his portly Majesty "promoted the appetite" and "prolonged the life" of thirsty ones from several boxes in various parts of the house.

Bovril.—On 1st March a decree for £1000 was granted in absence, by Lord Kincairney in the Court of Session, against a person in the West of Scotland, who had slanderously represented himself as an agent employed by the Bovril Company, Limited, to purchase old horses to be manufactured into the fluid beef preparation known as Bovril. The pursuers assured the Court that the preparation in question was the guaranteed product of prime ox beef in the very best condition, and that it is manufactured under the direct supervision of Dr Harkness, Government Analyst, Somerset House, London. We notice that the illustrated weekly journal called *Commerce* has, in its issue of March 7, a very interesting article on the rise and progress of the manufacture of Bovril.

OBITUARY.

THE LATE PROFESSOR LEISHMAN.

The announcement of the death of Dr William Leishman, Professor of Midwifery in the University of Glasgow, has been received with great regret among a wide circle in and beyond the medical profession. In the midst of his usefulness, he was laid aside from work over a year and a half ago by a cerebral seizure from which he never quite recovered. Latterly hopes were entertained of his restoration to health, but grave symptoms appeared about a week before his death, and he sank on 18th February last, at Fairy Knowe, Blairmore, his country residence.

Dr Leishman, second son of the Rev. Dr Leishman, parish minister of Govan, was born 8th June 1834. He distinguished himself as a student in Glasgow University, and graduated there as M.D., with honours, in 1855. Settling in Glasgow, he began as general practitioner, but devoted particular attention to midwifery and gynæcology, and was soon recognised by his professional brethren as an authority in these departments. He became Physician to the Royal Infirmary and the Maternity Hospital, and Professor of Medical Jurisprudence at Anderson's College. Among other local appointments, he had been Surgeon to the prison of Glasgow, and was Examining Physician to the Scottish Amicable Insurance Company. After his appointment to the University, he was Physician to the Dispensary for Diseases of Women at the Western Infirmary, and to the Sick Children's Hospital. On the death of Dr Pagan in 1868, who had held the Chair of Midwifery in the University from 1840, Dr Leishman was appointed his successor, and continued to fill that position actively till the occurrence of his illness above mentioned.

The appointment of Dr Leishman to the Midwifery Chair was regarded as a peculiarly happy one by the profession and the students alike. Besides being able to speak as a master and authority in his subject, he was a man not only of strong natural ability but of general and social culture, had a good presence, ready expression, and a fine manly voice; and he possessed, in a high degree, the quality of clearheadedness, indispensable to a true teacher. He has been described as an ideal lecturer, but he was better than that—he was an ideal teacher. That such a professor had the respect and admiration of his students goes without saying. Among other tributes that have reached the writer may here be quoted one from a former student, Dr John A. Macdonald of Grantham, who had attended Dr Leishman's course in 1884-5:—

> "Every one who has had the privilege of being a student in Dr Leishman's class will hear of his death with sincere regret and with a feeling of personal loss. No class in the curriculum was more keenly enjoyed by the students than his. The junior student looked forward to the time when he would become a member of it, and the senior was truly sorry when he found the end of it drawing near. It was a class which could never be dull or uninteresting, and no member was ever willingly absent from it. The strong personality of Dr Leishman fascinated and enchained the attention of all who sat in front of him. His great personal dignity, his exceptionally fluent and picturesque language, his keen sense of humour and enjoyment of a good story, and his evident enthusiasm in his work as a teacher, formed a combination which

roused even the most apathetic of students. Even more remarkable than the brilliance of his style was the extreme lucidity of his explanation of even the most difficult and complicated problems, and details which otherwise might have proved dry and uninteresting at his touch glowed with animation.

"Apart from the special work of his own class, Dr Leishman bad the strongest sympathy for all students and students' doings, and no one who was ever brought into personal contact with him would hesitate to appeal to him again for guidance or support. The strongest testimony to his success as a teacher is found by his old students in the frequency with which, in the difficulties and anxieties of their work, the precepts and practice they have learned from Dr Leishman come to their aid."

What Dr Leishman was as a colleague, and in the affairs of the University, may best be told in the words of Prof. Gairdner, his fellow-worker for twenty-four years. Referring to the obituary notice in the *Glasgow Herald* of February 19th, Dr Gairdner says :—

"I should be glad to be allowed to add a few sentences to the generally true and kindly remarks to be read in the *Herald* to-day as regards one whom all his colleagues will remember with respect and affection, as alike devoted to the university which he served and to the profession which he loved. Dr Leishman, especially in later years, gave a great deal of time to public work in the General Medical Council, in the University Court, and in the Senate. He was almost an ideal councillor, as we know from the words of sincere sympathy spoken by Sir Richard Quain in connexion with his retirement from the first of these positions. But it was necessary to have lived and worked alongside of him for a number of years to learn the secret of his combined strength and suavity. It was not at all because Dr Leishman disliked or was afraid of controversy that, as you remark, his words were usually, if not always, on the side of peace and harmony, and yet carried great weight. It was because they carried great weight, and were always kept studiously free from personal considerations, that they tended on the whole in the direction of peace and amity. He liked to look at a subject all round, and to see what was reasonably to be said on every side of it. He had strong convictions—personal, political, and academical, and never hesitated in expressing them ; but he was entirely above, and incapable of, the exaggerations that spring from a heated and ill-considered partisanship. Hence among his colleagues his judgment was felt to be one that could be relied upon in all circumstances. It was safe, and in the main conciliatory, without being weak or colourless. And even his enemies (if he had any) must at once have come to know that here was a man whom it was of no use to try to fight with the weapons of detraction and abuse, because he not only did not use these himself, but surrounded all his words and his doings with an impersonal atmosphere against which such venomous shafts fell powerless, because the man himself was invulnerable in his sense of duty and public spirit. He was, in short, a strong man and a wise one in dealing with subjects which he thoroughly understood, and he rarely went beyond these. And yet, as all his intimate friends well knew, he was a large reader of much and varied literature, both English and foreign, and especially French and German. And all his conversation was thus full of the suggestiveness that comes only of a high culture and great activity of thought upon many and varied problems. As an individual member of the Senate much in contact with my now departed colleague, I feel that there is no one to whom we all owed more, or who more ably and fully reflected the intelligence and maintained in a more dignified manner the interest and character of the university, than Dr Leishman. There was in him a great store of loyalty as well as of 'sweet reasonableness' which never failed to assert itself at the right time, and usually carried the convictions of all who were capable of being convinced by argument."

Dr Leishman was well known as an author. He had already published various contributions on obstetrical subjects in the medical journals; in 1864 appeared his work on *The Mechanism of Parturition;* and in 1870 a larger work, his *System of Midwifery.* This work attracted general notice, and became the standard text-book of the day. It went through four English editions and three editions in America, and Dr Leishman was engaged on a fifth edition when he was laid aside by illness. His knowledge of French and German enabled him to be in touch with what was doing in his subject on the Continent, and was an additional source of power in his teaching. He was a Corresponding Member of the Obstetrical Societies of Berlin and Edinburgh, a Vice-President of the Obstetrical Society of London, and was the first Honorary President of the Glasgow Obstetrical Society. He had a wide consulting practice in midwifery and diseases of women in and beyond Glasgow, enjoying to the full the confidence of the profession. Latterly he confined his practice mostly to diseases of women.

Reference is made above to Dr Leishman as a member of the General Medical Council. A few words may be added in regard to what I knew of him in that capacity and cognate to it. I became acquainted with Dr Leishman at conferences that took place in Glasgow and Edinburgh of representatives of the Scottish Universities in regard to projects of medical legislation, in the years preceding the Medical Act of 1866. The situation was critical, involving questions of policy in regard to the method of entering the medical profession. There was no difficulty in singling out Dr Leishman as the strong man, manifest in his grasp of the subject, his fairness to those who were at that time opposed to us, and in his foresight as to what was practicable. In regard to subsequent Bills before Parliament he was entrusted by his University with full powers, and in the many communications that passed between us he was always a candid critic and safe adviser.

When, under the Medical Act, 1886, the representatives of the Scottish Universities on the Medical Council were increased from two to four, it was a pleasure to have Dr Leishman there. He was a strength to the Council and a friend to rely on. But he was not a partisan of "interests." In the Education Committee, and in the Council itself, in planning the new five-year course of study, he joined cordially in the wide view of what was best for improving the education of the profession in the public interest, irrespective of the interests of universities and corporations. I need not now abstain from saying that he was the member of the Education Committee to whom I chiefly looked for candid and valuable criticism on the reports it fell to me to draft, and it was a satisfaction to me to have such a successor when I left the Council in 1891, on the settlement of the new five-year system. In the Council Dr Leishman's qualities above referred to gave him weight from the beginning. He was not addicted to speaking unless he had something important to say, and when he did speak his strong common sense and conciliatory aim always secured him an attentive hearing.

I may be allowed to say, further, that I had still better opportunity of seeing into Dr Leishman's nature, as during the meetings of the Medical Council we generally lived together; another esteemed friend, his colleague, Sir George Macleod, also with us, whose sudden death, in 1892, was a severe blow to Dr Leishman. In these opportunities I had abundant evidence of Dr Leishman's upright nature,—his scorn for the tortuosities and selfishnesses which his insight into character enabled him to see through, and his contempt for the little quackeries too often seen within the profession.

I can well understand what a loss a man of these personal qualities and that business faculty must be to a body like the University Court, and generally to the University of Glasgow. The death of Dr Leishman, in the midst of his ripest experience, cannot be reckoned as less than a loss to the whole medical profession.

Dr Leishman is survived by Mrs Leishman, his son, who is surgeon-captain in the army, and by three daughters.

JOHN STRUTHERS.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—THE DISORDERS OF SPEECH.

By JOHN WYLLIE, M.D., F.R.C.P. Ed., one of the Ordinary Physicians to the Royal Infirmary, Edinburgh; Lecturer on Medicine in the Edinburgh School.

(*Concluded from page* 881.)

DYSARTHRIC AND ANARTHRIC DISTURBANCES OF SPEECH DUE TO LESIONS AFFECTING THE MOTOR SPEECH-TRACTS—*Continued.*

LESIONS IN THE SECOND TROPHIC REALM.

IN the foregoing notes upon lesions in the first trophic realm of the speech-tract, I have taken the part of the tract for the vocal mechanism and the part for the oral articulative mechanism together; because they lie in juxtaposition throughout their course, and when affected by disease are almost necessarily involved together. But in now treating of the second trophic realm, it will be best for us to take the two parts of the tract separately; because each part, springing from its own root-cells in the medulla, is continued to its muscular distribution in the form of separate and distinct motor nerves, which can easily be affected by disease independently of each other. I shall first consider the lesions of the nerve trunks, and then the lesions of the medullary nuclei from which they spring; and I shall begin with the motor nerves of the Vocal Mechanism.

1. *Lesions in the Second Trophic Realm of the Motor Tract for the Vocal Mechanism.*—The reader will remember that the motor nerves for the larynx take their origin in the medulla from the nerve-cells of the spinal-accessory nucleus; that the root-fibres proceeding from this nucleus soon join themselves to the trunk of the vagus; and that, after joining the vagus, they are continued down in the neck as part of its trunk, until—(1), a small number of them leave the vagus to form the motor portion of the superior laryngeal nerve; and (2), the bulk of them leave the vagus at a much lower level, to constitute the great motor nerve of the larynx, viz., the recurrent laryngeal.

As to the Superior Laryngeal nerves, it will be remembered that the muscles of the larynx deriving their motor innervation from them are the crico-thyroid muscles and the small muscles which depress the epiglottis during deglutition. According to some authorities, filaments from them are also supplied to the inter-arytenoid muscle, and to the lateral crico-arytenoid muscles; but this is doubted by others, and seems to be contradicted by the evidence obtained from the study of paralysis due to lesions of the recurrent nerve. The crico-thyroid muscles, undoubtedly supplied by the superior laryngeal nerves, help to fix the thyroid cartilage during phonation, and to tighten the cords during the production of high notes. They act by approximating the cricoid cartilage to the thyroid, in front. Bilateral paralysis of the superior laryngeal nerves is said to be of not uncommon occurrence as an accompaniment or a sequela of Diphtheria, and Sir Morell Mackenzie states that in such cases the chink of the glottis, in phonation, instead of being straight, is bent in zigzag or sinuous fashion, owing to the undue slackening of the cords. The patient, it would appear, may be either voiceless or merely husky. But the chief symptom of paralysis of the superior laryngeal nerve is paralysis of *sensation* within the larynx. It will be remembered that, besides containing the motor fibres above mentioned, the superior laryngeal is also the *sensory* nerve for the larynx. Within the nerve, and within the trunk of the vagus, its sensory fibres course along with the motor; but in the medulla the two sets of fibres are separated from each other, the sensory fibres being connected with the nucleus of the vagus, and the motor with the nucleus of the spinal-accessory. It will be readily understood that the sensory and motor symptoms characteristic of paralysis of the superior laryngeal nerve may be produced either by a lesion of the nerve itself or by a lesion of the trunk of the vagus above the point at which the nerve branches from it.

The Recurrent Laryngeal nerve is, of course, the great motor nerve of the larynx. With the exception of the crico-thyroid muscles above mentioned, it supplies all the muscles which act upon the vocal cords. It thus supplies both the adductors which close and the abductor which opens the glottis.

Careful observation within recent years has brought out some interesting facts about the two sets of fibres—adductor and abductor—that go to make up the recurrent laryngeal nerve. On the one hand, it has been found that when the whole nerve is stimulated with electricity, the effect is not an equally balanced contraction of adductor and abductor muscles, resulting in absence of movement in either one direction or the other, but a movement of *adduction*, which closes the glottis. And, on the other hand, it has been found that when the whole nerve is gradually compressed from without by a tumour, the result is not a slowly increasing paresis equally marked in adductors and abductor, but a paresis which shows itself first in the abductor movement, and goes on to paralysis of that movement before there is any distinct paresis in the movement of adduction. How are these two facts to be explained? There has been much controversy about their explanation, and it would take a great deal of space to make a statement of all the hypotheses that have been advanced. I shall content myself with making a brief note of two different explanations, which are each supported by high authority.

Dr Gowers[1] holds that there may be no inherent difference in the properties of the two sets of fibres, and that both of the phenomena above noted may be explained if the bulk and strength of the adductor muscles are—as they seem to be—greater than those of the abductor; or if, as he thinks is the case, the weaker abductor acts at a disadvantage as compared with its opponents, owing to the nature of its attachment to the arytenoid cartilages, and the angle at which it pulls. If we grant that, in the muscular and mechanical arrangements within the larynx, it is thus provided that adduction has a distinct preponderance of power over abduction, then we can understand how it is that stimulation of the whole nerve trunk may cause closure of the glottis, owing to this preponderance of the adductor power; and how, again, when the whole nerve trunk is being slowly weakened by pressure, paresis may show itself first in the movement that is originally the weaker.

Dr Semon,[2] however, explains the phenomena in a very different manner. He holds that, in the two sets of fibres composing the nerve trunk, there are inherent physiological differences. To the adductor fibres, he attributes a greater inherent *excitability*; and to this, he thinks, is due the closure of the glottis which occurs when the whole trunk is stimulated. To the abductor fibres, on the other hand, he attributes a greater *vulnerability*; and in this he finds the explanation of the fact that paralysis of abduction precedes paralysis of adduction, when the whole trunk is being slowly disabled by pressure from without. If, hereafter, it should be thoroughly established that, in these cases of pressure on the nerve, there is distinctly greater *wasting* in the abductor muscle than in the adductors, then Dr Semon's explanation must be accepted; but if, on the other hand, the degree of wasting is equal in abductor and adductors, then Dr Gowers's explanation will have the advantage.

A third explanation of the early appearance of paresis of abduction in these cases of pressure on the nerve trunk was offered by Sir Morell Mackenzie, in his work on *Diseases of the Larynx*. He suggested that, in the trunk of the nerve, the abductor fibres might be arranged peripherally in the outer zone of the nerve-trunk; whereas the adductor fibres might be collected in the centre. This would account, he thought, for the earlier appearance of abductor paresis. But experimental stimulation of the nerve fibres in the trunk has not confirmed this suggestion. Dr Risien Russell,[1] especially, has made a series of conclusive experiments upon the nerves of living animals. Dissecting out the nerve bundles from each other, and stimulating them individually with electricity, he has been able to distinguish the adductor from the abductor bundles, and has found them not to be arranged as suggested by Mackenzie, but to be mixed up indifferently throughout the thickness of the trunk.

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[1] *Diseases of the Nervous System*, vol. ii. p. 262.

[2] "Geschichte der Lehre von den motorischen Kehlkopflähmungen," a contribution to *Virchow's Festschrift*, vol. iii. p. 407.

Let us now, from a more strictly clinical and practical point of view, consider, for a moment, the effects of pressure upon the trunk of the recurrent nerve. As a typical example, let us take a case of Aneurism of the Arch of the Aorta, with pressure upon the left recurrent nerve. In the course of such a case, there is apparently always a first stage, during which the paralysis betrays itself by no symptom whatever, except, it may be, a very slight alteration of the voice. This is the stage at which, as yet, there is only paralysis of the abductor muscle, without paralysis of the adductors. If the patient be examined with the laryngoscope at this stage, the left cord is found fixed near the median line—in the position it ought, normally, to occupy only during phonation. It remains there even when, on the patient taking a long breath, the opposite cord is abducted to its full extent. It seems to be the tone of the unopposed adductor muscles that thus keeps the cord of the affected side fixed permanently in the position for phonation. In this stage, the voice is normal, or only very slightly altered; and there is no difficulty of breathing, because the other "gate of the glottis" is open during respiration, and can be swung open to the fullest extent when a long breath is taken. In fact, this stage of recurrent paralysis can only be diagnosed with the aid of the laryngoscope.

With continued and increasing pressure upon the nerve trunk, there is, by-and-by, developed the second stage, characterized by the addition of adductor paralysis to the already existing paralysis of abduction. In this stage, the cord of the affected side is no longer stretched near the median line—in the position for phonation,—as it was in the first stage. The tone of the adductor muscles which kept it there being now lost, the cord falls back from the middle line into the "cadaveric position"—a position midway between that of adduction and that of abduction; —and there it lies immobile, both during attempted phonation and during deep inspiration. When the patient attempts to phonate, the cord of the opposite side is strongly adducted; and, in its effort to meet its paralyzed neighbour, it even crosses the middle line, so as to leave but a narrow interval between itself and the paralyzed cord. The interval is sufficiently narrow to enable the patient to whisper; and, in the whisper, there is generally a feeble vocal element due to the vocal vibration of the sound cord. The symptoms and the laryngoscopic appearances of this, the second stage of recurrent paralysis due to aneurism, are familiar to every physician ; but the first stage is not so familiarly known, as there may be no symptoms betraying its presence, and as it can only be diagnosed with the aid of the laryngoscope.

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[1] *Proceedings of the Royal Society*, vol. li. p. 102.

Unilateral paralysis of the recurrent nerve, such as is thus so often due to aneurism of the aorta, may also be due to other causes, and occur in connexion either with the left or with the right recurrent. Thus the pressure from a tumour in the mediastinum, or from a glandular tumour in the neck, or from the enlarged lateral lobe of a goitrous thyroid body, or, again, the involvement of the nerve in cancerous disease of the œsophagus, or its compression, on the right side, by the newly-formed connective tissue of a pleuritic thickening at the apex of the right lung,—all of these conditions may produce paralysis of the recurrent nerve on one or other side; and the paralysis may present a first and a second stage, as when it is due to the pressure of an aortic aneurism.

Further, it should be remembered that recurrent paralysis is sometimes due to pressure upon the trunk of the vagus, at some point above the level at which the recurrent nerve is given off. If the point pressed against be so high in the neck as to be above even the point at which the superior laryngeal is given off, then, along with recurrent paralysis, there will be also paralysis of the superior laryngeal nerve, with its characteristic anæsthesia of the larynx.

In some rare cases, Bilateral Paralysis of the recurrent nerves has been found to be due to pressure, either upon the two recurrent nerves or upon the two pneumogastrics. This bilateral paralysis presents the same two stages in its progress as have already been described as occurring in unilateral recurrent paralysis. First, in the stage of simple abductor paralysis, the cords lie in the position of adduction, close to each other in the middle line; and then, in the stage of combined abductor and adductor paralysis, the cords have retired from the middle line, and lie in the cadaveric position at some distance from each other. It will be readily understood that in the first stage there is great danger of suffocation. The cords lie so close to each other that there results that crowing stridulous inspiration so characteristic of bilateral abductor paralysis. The noise is loudest when the patient makes any exertion, and when he is asleep ; and during sleep a paroxysm of laryngeal dyspnœa may set in, and may end fatally. Tracheotomy is thus often advisable, in bilateral paralysis of the abductor. Though inspiration is noisy and difficult, expiration is easy ; and the voice, in speech, may, in this stage, be natural. When, in the second stage, the cords retire into the cadaveric position, breathing becomes easy, all stridor disappearing; but, in this stage, the voice is lost, because the adductors are now paralyzed, as well as the abductor.

Before leaving the laryngeal nerves, I may refer, in a word, to the occasional occurrence of neuritis in one or other of their branches of distribution, and to the resulting paralysis of one or other of the individual muscles of the larynx. I have already, in the second paper of this series, made some brief reference to the loss of voice which may be caused in this way, by the paralysis of some single adductor muscle.

It still remains for us to consider the Nuclear Cells in the Medulla, from which the motor nerves of the larynx spring. As already indicated, these cells form part of the nucleus of the spinal-accessory division of the eighth cranial nerve. It has been asserted that some of them are also contained within the nucleus of the vagus, but this opinion still requires confirmation.

There are many lesions, coarse and fine, which may affect the motor and sensory nuclei in the medulla; but, as some of these affect, indifferently, the cells of either the oral articulative mechanism or the vocal mechanism, or affect both sets of cells simultaneously, and as others, such as the lesion in glosso-labio-laryngeal paralysis, are primarily developed in the cells of the oral articulative mechanism, I think it will be well to reserve any enumeration of them until we come to look at the nuclear origins of the nerves for the oral articulative mechanism. But there is one lesion which is of special interest in the present connexion, as, on invading the nuclei of the medulla, it seems to have a special proclivity to affect the motor cells of the vocal mechanism,—I mean the spread of degeneration into the medulla in cases of tabes dorsalis (locomotor ataxy).

It is now well ascertained that, in the course of ordinary tabes dorsalis, two forms of laryngeal complication may be developed, in consequence of this invasion of the spinal-accessory nucleus. These are—(1), Temporary paroxysms of laryngeal dyspnœa ("laryngeal crises"), which by some authorities are attributed to temporary spasm of the adductor muscles, and by others to temporary paralysis of the abductor; (2), permanent paralysis of laryngeal muscles. This paralysis seems always to affect the abductor in the first instance. It may be confined to this throughout, or, in course of time, may involve also the adductors.

Often, especially at first, the paralysis is unilateral; and then, so long as it is purely a unilateral abductor paralysis, it can only be detected with the laryngoscope,—there being no symptoms, such as loss of voice, or laryngeal dyspnœa. When, however, the adductors are also affected, and the cord has fallen back from the median into the cadaveric position, then there is loss of voice, as in the advanced stage of unilateral recurrent paralysis in cases of aneurism.

If there is bilateral paralysis of the abductor muscle alone—as, in tabes dorsalis, there often is,—then the patient suffers from the marked and dangerous laryngeal dyspnœa which has been already noted as characteristic of that condition. This will disappear, but the voice will be lost, if the paralysis ultimately involves also the adductors.

These laryngeal complications of tabes dorsalis must be commoner than is usually imagined. Dr Semon says that in the first twelve cases of tabes examined by him in the "National Hospital for Epilepsy and Paralysis," he found no fewer than seven to be affected either with unilateral paralysis of the abductor, or with unilateral paralysis of both the abductor and the adductors, or with severe bilateral paresis of the abductor. But he adds that in the next fifty or sixty cases not a single case presented any symptom of laryngeal paralysis.[1]

Seeing that in so many of these cases the abductor is affected alone, or is affected first, before the adductors are also involved, Dr Semon has been naturally led to the conclusion that in the medullary nuclei of the laryngeal nerves there is the same comparative vulnerability in the abductor nerve-cells that he believes to exist in the abductor nerve-fibres of the recurrent nerve. And this conclusion would be irresistible, if it were proved that all degenerative conditions invading the medullary nuclei singled out the abductor cells in similar fashion. But this is not proved. The leading degenerative disease of the medullary nuclei is Progressive Bulbar Paralysis (glosso-labio-laryngeal paralysis); and when that disease, in its latter stage, spreads from the nuclear cells of the oral articulative mechanism into those of the vocal mechanism, it attacks first the adductor cells,—not the cells for abduction. It does not, however, often cause complete paralysis of the adductors. "The laryngeal palsy," says Dr Gowers, "rarely becomes complete, and it is still rarer for the power of abduction to be specially lost, common as abductor palsy is in some other forms of central degeneration."

Some explanation other than that offered by Dr Semon may yet be found—possibly one connected with the anatomical position of the abductor cells,—to account for the frequent occurrence of abductor paralysis as a complication of tabes dorsalis.

In dealing with any case of laryngeal paresis or paralysis, a very important question for us to determine is, whether the paralysis is of functional or of organic origin. As recent investigation has thrown considerable light on this question, perhaps it may be well for us to devote here a little attention to it.

If we take first the Bilateral forms of paresis or paralysis, we may make note of the following general conclusions:—

1. That a bilateral paresis of the Adductor muscles, without any affection of the abductor, is almost always of functional origin,

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[1] *Op. cit.*, p. 444.

and is commonly due to hysteria. When it is slightly pronounced, it causes "hysterical aphonia." When it is better marked, it causes the common variety of hysterical mutism. This subject has already been fully discussed in the second paper.

We must, however, admit that in a few cases this paresis of the adductors may be of organic origin, — if it is true that when progressive bulbar paralysis invades the nuclear cells of the vocal mechanism the adductor cells are the first to be affected.

2. That a bilateral paresis or paralysis of the Abductor, without apparent affection of the adductors, is very generally of organic origin,—being most commonly the result of lesion in the bulbar nuclei, as well as being also, in rare cases, the first effect of pressure upon both recurrent nerves or both pneumogastrics.

It is believed by some authorities, however, that this paralysis may in a few cases be of functional causation. Gowers, for example, states that temporary attacks of it, attended with the characteristic dyspnœa, have been known to follow an ordinary laryngeal catarrh; and he expresses his belief that the laryngeal paroxysms of dyspnœa which occur occasionally in some cases of hysteria may sometimes be due to temporary paralysis of the abductor, and not always to spasm of the adductors, as is usually supposed.

3. That a bilateral paralysis involving both Abductor and Adductor muscles is always of organic origin. There seems to be no exception to this rule.

If we now pass to the Unilateral forms of paralysis, we can say in brief about them, that whether they affect adductors or abductor, they are practically all of organic origin.

Possibly it may yet be found that there are rare cases of Hysteria in which there is adductor paresis of one cord only. This possibility I shall discuss presently.

As to the Situation of the lesions accountable for these various forms of paralysis when they are of organic origin, we can say that in the vast majority of cases, if not in every case, it is somewhere in the second trophic realm of the motor tract. It is either in the medullary nuclei, or in the trunks of the nerves, or in their branches of distribution. Being due to lesion in the second trophic realm, these paralyses are attended with the characteristic wasting of the paralyzed muscles.

The rare exceptions to this law—that the organic lesions capable of producing paralysis in the larynx are situated in some part of the second trophic realm of the motor tract—are furnished by bilateral lesions involving the first trophic realm, in both hemispheres or in both crura; and by central lesions in the pons which disable both tracts. In such cases, as we have seen, there is pseudo-bulbar paralysis—a paralysis always bilateral;—and all voluntary control over the larynx, as well as over the muscles of the tongue and lips, is lost.

If the motor representation of the vocal cords in the cerebral cortex is *perfectly* bilateral (as Semon and Horsley believe it to be), then it is not possible for any lesion in the first trophic realm—whether in one cortical centre or in its tract—to produce paralysis of one vocal cord (unilateral paralysis in the larynx); because the remaining cortical centre and its tract continue to innervate both cords. Nor, *à fortiori*, is it possible for any disablement there from functional causes, such as hysteria, to produce unilateral laryngeal paralysis.

But if further investigation should show that Masini is right in stating that the motor representation of the vocal cords in the cortex is not perfectly, but is only imperfectly, bilateral—just as is the motor representation of the tongue, lips, etc.,—it would then appear that it *is* possible for a unilateral lesion in the first trophic realm (either in one cortical centre or in its motor tract) to produce paresis of the opposite cord,—just as a lesion in the first trophic realm of one tract for the oral articulative mechanism produces a slight paresis in the opposite side of the mouth and of the tongue, as is seen in ordinary hemiplegia. And if an organic lesion on one side can thus produce a unilateral paresis in the opposite cord, so perhaps may a functional disablement on one side, due to hysteria.

As we saw in a former paper, cases of cerebral lesion in one or other of the hemispheres attended with motor paralysis in the opposite cord have already been published. It is, however, suggested by Dr Semon and others, that in these cases some other lesion, in what I have termed the second trophic realm of the tract, must have been present, though overlooked. We must wait for further evidence, before we can be quite sure which party in this controversy is right. If cases of hysterical hemiplegia should be met with in which there is loss of voice from adductor paresis of the vocal cord on the same side as the hemiplegia, they would lend support to the opinion of Masini that the motor representation of the vocal cords is only imperfectly bilateral; since they would tend to show that even a functional unilateral disturbance of the cerebral cortex is capable of producing a unilateral paresis of the opposite cord. The weight of evidence, however, at the present time, is strongly in favour of the conclusion of Semon and Horsley, that the representation of the vocal cords *is* perfectly bilateral, and that it is, therefore, impossible for any organic lesion or functional disturbance in the first trophic realm to produce unilateral paralysis or paresis in the larynx.

The common bilateral paresis of the adductors in hysteria is commonly believed to be due to functional disturbance of motor power, or, shall we say, the power of will, in both hemispheres.[1]

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[1] For fuller information regarding the Paralyses of the Larynx, see the chapter on the subject by Dr Gowers in his work on *Diseases of the Nervous*

2. *Lesions in the Second Trophic Realm of the Motor Tract for the Oral Articulative Mechanism.*—This realm begins in the motor nuclei of the medulla, and extends, in the form of various motor nerves, to the muscles of oral articulation. The nuclei from which the nerves spring are the motor nuclei of the seventh pair, the hypoglossal nuclei, and portions of the nuclei of the spinal accessory. The nerves are the portio dura of the seventh, the hypoglossal, and the nerves from the spinal - accessory nucleus which supply the soft palate and the muscular wall of the pharynx.

As I do not think it would be of much advantage to attempt here an elaborate description of the lesions of the nerve trunks, I shall content myself with reminding the reader of a few leading facts about these lesions.

First, about the portio dura of the Seventh, I need scarcely say that unilateral paralysis, due to neuritis of the nerve trunk (Bell's paralysis), is one of the commonest of all the forms of local paralysis. Though the mouth is pulled towards the opposite side, and the lips on the paralyzed side are flaccid, the articulation of the labials and the labio-dentals is only slightly interfered with. In rare cases, both nerves are paralyzed; and then the whole face is expressionless, and the lips are flaccid on both sides. Commonly, these cases are due to the pressure of a tumour at the base of the brain upon the nerve roots. But, some years ago, I had, in my wards, a case in which this bilateral paralysis had been caused by injury of the nerve trunks, at or about their exit from the stylo-mastoid foramina. In the bilateral cases, the enunciation of the labials and labio-dentals is impossible; but, as the other parts of the articulative mechanism are intact, speech is not very seriously damaged, and is always easily intelligible. It is most striking to hear and see a patient with double facial paralysis laugh: there is something so incongruous between the sad, flaccid, and immobile countenance, and the merry sounds that come, as it were, from behind it. The patient just referred to, whose double paralysis was due to injury, used sometimes to laugh heartily; and she always produced a strong impression on her hearers when she did so.

Paralysis of the Hypoglossal nerve from lesion of the nerve trunk is so rare, that I think we may pass it over. It would, of course, produce paralysis of the tongue on the same side, with very marked wasting; but would probably not interfere very seriously with articulation.

Paralysis of the fibres from the Spinal-accessory nucleus which supply the soft palate is of importance, because it is a frequent complication or sequela of diphtheria. In such cases, it is usually

System, vol. ii. p. 256; or the article by Dr Semon referred to in the footnote to p. 865; or the chapter by Dr M'Bride in his work on *Diseases of the Throat, Nose, and Ear*, and an article by the same author in the *Edinburgh Medical Journal*, July 1885.

bilateral. It causes the soft palate to droop, and to remain drooping even when the patient takes a long breath or sings a high note. During deglutition, it permits the escape of fluid through the nose. In speech, it produces the peculiar and characteristic nasal snuffle. It is one of the advantages of studying the function of speech with close attention, that such an alteration of speech as is produced by the presence of even a slight nasal snuffle is at once detected by the trained ear. I can recall, at the present moment, a case in which the presence of a slight nasal snuffle in speech led to the immediate detection of a diphtheria, though the patient was making no complaint about the throat; and another case—one of suppression of urine from blocking of both ureters—in which it led to the examination of the throat, and the detection of an œdema of the soft palate and uvula,—the beginning, as it proved to be, of an acutely advancing dropsy, which caused death in a few hours, by invasion of the lungs. Many other conditions besides paralysis of the soft palate, and œdema of it, may produce a nasal snuffle in speech—as, for example, perforating ulcer of the soft palate, and split palate;—and some people snuffle in speech either from habit and carelessness, or from not having learned in childhood how to manage the soft palate in speaking.

More important than the lesions of the nerve trunks, are lesions of the medullary nuclei from which they spring. Affections of these nuclei produce the type of paralysis known as Bulbar Paralysis.

There are a few cases in which this type of paralysis is suddenly or rapidly produced by such gross lesions as apoplexy, or acute inflammatory softening, in the medulla; but such cases are comparatively rare, and usually prove rapidly fatal. More common and important are those in which disease is of the degenerative and sclerotic type. Such disease slowly involves the nuclei more and more, until there is total paralysis of the muscles supplied from them. This slow degeneration of the bulbar nuclei is sometimes a complication of certain diseases of the spinal cord, such as chronic progressive poliomyelitis (progressive muscular atrophy), or tabes dorsalis, or multiple sclerosis. Sometimes it is a disease *per se*, being, throughout its course, confined to the nuclei of the medulla. It is then known as Progressive Bulbar Paralysis, or Glosso-Labio-Laryngeal Paralysis. This is the most important of the varieties of Bulbar Paralysis; and I think it will suffice for the purposes of this paper if I make a very few notes about it.

Progressive bulbar paralysis is always bilateral; and the nuclei first affected are usually those for the innervation of the tongue. Thence the disease spreads to the nuclear cells for the lips, and to those for the soft palate and the pharynx. It is only, as a rule, when all these parts have, in course of time, become totally, or almost totally, paralyzed, that the disease overflows, as it were, into the nuclei for the innervation of the larynx.

I need not, in detail, describe the well-known symptoms of progressive bulbar paralysis, but I may remind the reader that, in the advanced stage of the disease, the lower part of the face becomes expressionless as a mask, the lips being entirely paralyzed and remaining helplessly apart, so that the patient cannot prevent the dribbling of saliva from the open mouth; that the tongue not only lies paralyzed in the mouth, but generally presents a wrinkled and shrunken or shrivelled appearance, due to marked wasting of its muscular substance, and often in its wasting fibres presents fine fibrillar movements like those in the wasting muscles of a patient with progressive muscular atrophy; that the palate hangs drooping and paralyzed; and that the paralysis of the pharynx renders deglutition impossible.

It will be readily understood that as the paralysis extends from tongue to lips, and from lips to soft palate and pharynx, corresponding deteriorations of articulation appear in the patient's speech. These, however, need not be described; as the best key to them is to be obtained from the study of the Physiological Alphabet. Sometimes the lips are affected before the tongue; and then it is the labials and the labio-dentals that first suffer. When the palate becomes affected, the characteristic nasal snuffle appears. In the advanced stage of the disease, if the larynx be yet unparalyzed, the patient, though totally unable to articulate, may still, when he tries to speak, be able to emit monotonous vocal sounds of a grunting character.

As to the final invasion of the larynx by the paralysis, it seems certain that, in the great majority of cases of this disease, the first muscles affected are the adductors,—not, as in tabes dorsalis, the abductor. It is rare for the patient to exhibit that laryngeal dyspnœa which is so characteristic of bilateral abductor paralysis. Usually he first exhibits a want of explosiveness in his cough; and afterwards the voice becomes enfeebled, though it is rarely altogether lost. Anæsthesia of the mucous membrane, from involvement of the sensory nuclei, is sometimes added to the motor paralysis. Owing to the combined motor and sensory paralysis of the larynx, the air-passages are imperfectly protected from the entrance of food or fluid, if the patient attempts to swallow; and it therefore becomes necessary to feed him with the stomach-tube.

I would here make a special note regarding the loss of explosiveness in the patient's cough, which often forms the first indication that, in the spread of bulbar paralysis, the larynx is beginning to be invaded. Some years ago, I noticed it in two cases of my own; and I made a note of it in a paper on "Extra-auscultation," recently contributed to the first volume of the *Edinburgh Hospital Reports.* I now find, however, that Dr Gowers had already made careful note of it, in his work on *Diseases of* *the Nervous System.* But I should like to direct attention to the explanation I have suggested for this want of explosiveness in the cough, as it is different from the explanation offered by Dr Gowers. Dr Gowers evidently holds the common opinion that in the closure of the glottis which is preliminary to the act of coughing, and which attends upon the act of straining, the glottis is closed efficiently against the exit of air by the co-aptation of the true vocal cords,—that, in short, it is closed in the same manner as it is for phonation, only with greater strength and firmness. He therefore regards the loss of explosiveness in the cough as simply a first indication of adductor paresis. But, as I have already explained in a former paper, the closure of the glottis for coughing or straining is a very different thing from its closure for phonation; because in phonation only the true cords are co-aptated, whereas in the preliminary stage of coughing and in straining the false cords are co-aptated as well as the true; and it is, I believe, the false cords, with the Ventricles of Morgagni, which, in valve-like fashion, hold in the imprisoned air during the preliminary or compressive stage of a cough. I do not know that the innervation of this important closure of the false cords has ever yet been adequately investigated. It may be that the muscular fibres which effect the movement are innervated, like those which depress the epiglottis, by the superior laryngeal nerve. But whether this be so or not, I think it highly probable that the nuclear cells for the movement are, in the course of progressive bulbar paralysis, invaded before the nerve-cells for the ordinary adductors of the larynx, and that thence results the early loss of explosiveness in the cough.

In my paper in the *Edinburgh Hospital Reports* I have termed the unexplosive cough above mentioned the "Bovine Cough," because an ox has no Ventricles of Morgagni or false cords, and its cough is therefore an unexplosive grunt or wheeze.

In a normal cough, there are both an explosive element, due to the action of the false cords, and a vocal element, due to the action of the true cords. In the Bovine cough, the explosive element is lost, but the vocal may be retained. In severe cases of hysterical aphonia, on the other hand, the vocal element is often lost, while the explosive is retained; though in mild cases both elements are retained. I have at present, in my wards, a severe case of this kind, in which the aphonia amounts almost to complete mutism, and has hitherto resisted treatment, even by our skilled specialists; and in this case the absence of the vocal element of the cough and retention of the explosive element are well exhibited. I think this condition of things shows that there may be adductor paresis of the true without adductor paresis of the false cords. Further, we can, each of us, in our own persons, cough at will, either—(1), in the normal way, with both elements in the cough; or (2), like the patient in the above-mentioned case of hysterical aphonia, with the initial explosive element, but without the accompanying vocal element; or (3), after the manner of the ox, with the accompanying vocal element, but without the initial explosive element. Does not all this show that there are two laryngeal mechanisms employed in the act of coughing, viz., that of the false cords and that of the true? It is now close upon thirty years since I first demonstrated the valvular action of the false cords and ventricles of Morgagni during the act of straining, and at the initial stage of coughing; and it is eleven years since my conclusions were confirmed by the joint investigations of Dr Lauder Brunton and Dr Cash, which I have already referred to. When will physiologists and physicians recognise that the subject is worthy of attention?

Alongside of these notes regarding the probable spread of degeneration, in the *second* trophic realm, from the nuclear cells of the oral articulation mechanism into the nuclear cells for the closure of the false cords, I should like to put a note reminding the reader of a point discussed in the first paper of this series, viz., the occurrence, a rather rare variety of stammering, of an overflow of energy, from the over-stimulated centres of the oral articulative mechanism into the centre for the closure of the false cords. There results, it will be remembered, when the patient attempts to speak, a closure of the "upper glottis," which gives its special feature to the "gutturo-tetanic" variety of stammering. I think it probable that this overflow occurs in the cortical cells of the *first* trophic realm.

In concluding this sketch as to the tract for the oral articulative mechanism, it may be well for us to ask ourselves what general conclusion it tends to lead up to regarding the diagnostic value of the dysarthric disturbances of speech that are produced by lesions of the speech-tracts.

I think, on the whole, it should teach us that in diagnosing the seat of any lesion involving the tract, either in its first or in its second realm, we should not rely exclusively, or even mainly, upon the specific speech-disturbances present. There is too much sameness in the alterations of speech, whatever may be the part of the tract involved, to warrant an exclusive reliance upon them. A thick, slurring, and more or less laborious articulation is the leading characteristic in nearly all such cases.

Yet there are varieties in the degree of the dysarthria which may sometimes help us to diagnose the seat of lesion. A total anarthria is more common in lesions of the pons or of the medulla than in lesions of the hemispheres or of the crura. A special slurring upon linguals or labials may suggest the early stage of bulbar paralysis; and a nasal snuffling may suggest a paralysis of the soft palate, perhaps of diphtheritic origin. Again, predominance of the *staccato* element in the speech ought to suggest multiple sclerosis, though something of the *staccato* element may, as we have seen, be present in other conditions.

On the whole, however, we shall do well, in trying to diagnose the nature and locality of disease in any case of dysarthria or anarthria, not to trust too much to the specific alterations of the speech, but, whilst giving these their due weight, to arrive at our conclusions only after having taken fully into account the associated symptoms of paralysis, and all the other symptoms of the case.

My task is now finished. I began these papers by considering the nature of Stammering, a disorder which, by the disruption it exhibits in the harmonious action of the vocal and oral articulative mechanisms, is admirably fitted to illustrate the semi-independence of each of these mechanisms, and to enable us to realize the beautiful coördination with which, in normal speech, they work together. I have now finished by tracing down the motor tracts of the two mechanisms to their terminations in the executive muscles, and by noting the leading conditions of disease that may interfere with motor conduction in them. In the course of the papers, we have been led to consider many matters of great interest and importance; for it is a great subject we have been discussing,—a subject full of interest in all its relations. I hope that these papers, as a contribution to the study of the subject, will be found practically useful. There are few studies, I think, so well calculated to give material help in the diagnosis of nervous diseases as the careful study of the Disorders of Speech. If these papers should prove of practical value to others, as an aid in the prosecution of this important study, it will be to me, I need scarcely say, a lasting pleasure and satisfaction.

I beg respectfully to tender my thanks to the Editor and Publishers of the *Edinburgh Medical Journal*, for allowing me to publish consecutively in the Journal so many papers on this subject; and to the Staff of the Journal, for much courteous help and attention.

II.—MORISON LECTURES ON INSANITY.

By John Batty Tuke, M.D., F.R.C.P.E.

(*Delivered before the Royal College of Physicians of Edinburgh.*)

(*Continued from page* 898.)

Lecture IV.

We must now turn our attention to a very important series of symptoms produced by morbid hyperæmia and congestion of the Rolandic area,—the impairment of the health of the general system. These somatic symptoms are of great interest, and their consideration has very considerable bearings on treatment.

It is not my intention to discuss in any detail the vexed question as to the manner in which the central nervous system affects metabolism—whether by the action of special "trophic" fibres, by the action of the vaso-motor systems, or by any undiscovered special quality of nerve regulating its government of muscle, gland, or connective tissue. The whole subject is far too complicated to admit of profitable discussion on the present occasion. We must content ourselves with the clinical fact that, under certain diseased conditions of the nervous centres and of their extensions, profound changes take place in the nutrition of the general system; that no tissue is immune from their influence; and that the functions of each and all suffer manifestly. We must work on the general principle "that the nutrition of each tissue is, in the complex animal body, so arranged to meet the constantly recurring influences brought to bear on it by the nervous system, that, when those influences are permanently withdrawn [or morbidly implicated], it is thrown out of equilibrium: its molecular processes, so to speak, run loose, since the bit has been removed from their mouths." [1]

The earliest symptoms of over-exertion of the brain have been already stated:—A general falling-off from the normal condition of the body; the skin gets harsh or clammy, the complexion pale or dusky; dry hair; uneasy, or actually painful, sensations are experienced at the vertex, less frequently over the temples and occipital region; the temperature may be slightly raised at night, sometimes unilaterally; the pulse is irritable, small, and compressible, increasing in volume as the case progresses, until it may become "cerebral" in character; the first heart-sound is generally accentuated; oxalates or phosphates are frequently present in the urine. Without any manifest disease of any particular organ, the whole system is out of tone. Apart altogether from the symptoms of restlessness, irritability, and anxiety, the patient is ill; to use a common colloquialism, he is below par. His nourishing power is diminished. As a rule the digestive system is the first to suffer prominently, dyspepsia in various forms presenting itself. The muscular system next shows indications of loss of tone. This prodromal period may last for long unnoticed by relatives or friends, except so far as they may remark that the patient is not looking well, and is not quite himself. The patient himself is not unfrequently painfully conscious of the change, and consults his medical adviser as to his condition; the symptoms most strongly weighing on him being the general sense of weakness, and the inability to apply himself to work. It is during this stage that we most frequently meet with abnormal salts in the urine. Are we to infer from this symptom that systemic degradation results from nerve waste, which, in its turn, may be ascribed to perverted metabolism of the superior cortical areas, and that reduction of nerve conductivity shows its effects on the glandular and muscular systems? To my mind it is impossible to refuse to draw the inference. But then the question arises, Is this a direct action, or is it through modifications of the vaso-control apparatus? I fear that in the present state of our knowledge the solution of this problem cannot be definitely arrived at; but I venture to say that, keeping before us the general results of physiological and pathological inquiry at our command, the strong probability is that impairment of the vaso-control system consequent on nerve implication is the efficient factor in producing reduction of general functional activities. It appears to me that a rough analogy is afforded by the study of herpes, and certain forms of scleroderma. In that condition we have an illustration of the coarse effects of impaired nervous control over limited areas, due to implication of ganglia; and to more extended areas, due to destructive disease of the cord and brain. According to Kaposi[1] the skin affection in herpes zoster appears to depend in many cases on a congested condition of the vessels supplying the ganglion or ganglia of the nerve or nerves supplying the parts affected. I only instance this disease as a possible illustration of the widespread effects on nutrition exercised by a localized curable nerve condition.

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[1] *Text-Book of Physiology*, Foster, Part ii.

The blood suffers sooner or later in respect of loss of red corpuscles and a diminished amount of hæmoglobin. My experience is that this deterioration does not occur till towards the end of the prodromal period, or even later. It is not easy to get definite information on this point; patients are nervous, restless, anxious, and suspicious, and are apt to resent the necessary processes of examination. Moreover, the number of observations necessary to arrive at any thoroughly satisfactory conclusion is a further obstacle. In the few cases I have examined with any degree of satisfaction, I have failed to find definite indications of the quality of the blood becoming markedly affected at an early stage; but as the case advances the blood certainly falls off in quality in the directions already indicated, the loss of hæmoglobin not being proportionate to the diminution of the number of corpuscles. There does not appear to be any loss of leucocytes. As to the relative amounts of the other blood constituents I have no experience; and, so far as I can discover, no very authoritative observations on the subject have as yet been published. I cannot venture to generalize on the few cases observed by myself; they only support the general result of the careful preliminary work of Macphail[2] and Smyth,[3] that the blood in the insane is in a morbid condition ; but we have no scientific data to help us to arrive at conclusions as to this morbidity being a primary or secondary condition. Proceeding on clinical observation, we have strong reasons for believing that, in certain classes of insanity, the pathological condition of the blood is a direct consequence of impaired nervous influence acting on the blood-glands, producing results on the nourishment of the general system ; that, in others, mere deficiency in quality and quantity is the efficient factor in the production of morbid mental symptoms ; and, in a third section, toxæmia, using the word in a very broad sense, is the active cause. But the actions and reactions of the blood conditions produced demands careful inquiry. This is now one of the great fields open to the student of the pathology of insanity, who, in prosecuting his research, must not only address himself to analytical processes, but must employ experimental methods. Mosso has set the example by transfusing the blood of fatigued animals into the circulation of the healthy, and has obtained interesting results. No one will accuse me of the weak jocularity of suggesting that the blood of insane persons transferred into a healthy animal would produce similar mental symptoms ; this line of inquiry would probably throw light on the nature of blood degradation, and of that of any poisonous material it might contain, present in consequence of elaboration or of non-elimination.

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[1] *Pathologie und Therapie der Hautkrankheiten*, 3rd edition.

[2] *Journal of Mental Science*, vol. xxxii.

[3] *Ibid.*, vol. xxxvi.

As to my own rough observations made on the special class of cases we are considering, I can only say that they were taken for the most part during the prodromal stage and the early period of excitement. The general result was that blood changes were not manifested until actual insane excitement had appeared, and that in cases of active mania or melancholia the changes were not so marked as in those in which the mental symptoms were less acute. I need hardly remind you that the incidence of acute mania or acute melancholia (the term acute being employed as indicating intensity of excitement), is, as a rule, much more rapid than in the subacute conditions. Considering these statements alongside of the opinion expressed that oxalates and phosphates are found in the urine more abundantly at an early stage of the disease, it appears to me that the sequence of pathological events is as follows :—Acute congestion and nerve waste, productive of active symptoms, which, if not relieved, is followed more or less rapidly by weakened action of the glandular systems, and consequent deterioration of function of the alimentary canal, and implication of the blood ; and that as a condition of nervous congestion and stasis is reached we have to deal with a further reduced functional activity, not only of the organ primarily affected, but also of the various systems which it governs. Nerve waste has reached its minimum capacity for loss, as indicated by oxaluria and phosphaturia. Hodge's experiments have shown us how rapidly what I have termed cell-collapse can be reached: it is not difficult to realize what the consequences of the maintenance of that condition would be, what disaster must follow if repair is not obtained.

Loss of tone of the digestive apparatus is an almost invariable prodromal symptom. It is manifested by obstinate constipation, large offensive stools, fœtid breath, eructations, furred tongue, and uneasy sensations. This condition is the objective starting-point for many delusions. It constitutes an important train of symptoms, whether we regard it from a physiologico-pathological or from a therapeutic point of view: for, as regards the former, it is another indication of the action of the diseased brain.

Accentuation of the first heart-sound, which is a common symptom, is of no importance, except so far as it is a further indication of the general implication of the nervous system. The same remark applies to the slight rise of temperature, which is seldom maintained for any great length of time.

Much greater importance is often attached to menstrual disturbances than is actually warrantable. Insanity is never directly due to arrest of menstruation. Its cessation is one of the symptoms of general degradation of the system, however caused, or of involution. Its return during convalescence does not mark a crisis in the case: it simply means that the reproductive organs are resuming function along with other systems. In that respect it is of importance, but in nothing more.

It may be well here, in connexion with the bodily symptoms, to point out the dangers to accurate diagnosis of the too ready employment of an etiological classification of the insanities. In looking over a list of varieties of insanity, we find Amenorrhœal, Menstrual, and Post-menstrual Insanity enumerated, and we have the broad statement of such eminent authorities as Esquirol and Morel before us, that mental aberration is caused by menstrual disturbances in one-sixth of all cases.[1] I cannot help thinking that on its very face this statement carries the impress of too broad and precipitate generalization. No one will now accept it; but it illustrates how prone the mind is to jump at conclusions as to the relation of cause to effect. We will all acknowledge that in the insane menstrual disturbances occur very frequently, and that at the period the mental symptoms are liable to undergo various modifications, exacerbations, or diminutions. Further, it may be allowed that during the prodromal period of many insanities the monthly flow is arrested. But does it follow on these admissions that amenorrhœa is to be held to be the proximate cause of the mental symptoms, or that we have in a given case sufficient to warrant us in calling it one of "amenorrhœal" insanity. First let me appeal to your experience amongst women who from puberty have suffered from scanty or profuse menstruation, or dysmenorrhœa unassociated with disease of any sort. Have you, amongst such, seen insanity occurring as a direct consequence? There are many present whose experience in such matters must be much greater than mine; still, I can state that the large proportion of such women are, so far as I know, much the same mentally as the mass, and are not more liable to break down, unless the conditions of menstruation are associated with neuroses not necessarily accompanied by insanity. Putting it conversely, have we not met with cases in which arrest was caused by severe mental shock, or has occurred during the progress of some acute bodily disease? When women reach the climacteric period, nervous symptoms, whether amounting to insanity or otherwise, do not present themselves at the exact period of menopause, but a year or so before the actual arrest, more frequently from one to two years after. Let us take a very common case—that of servant girls who, coming from country districts and farm-work to domestic service in a city, after a shorter or longer period fall off in health, cease to menstruate, and become depressed and melancholic. Are we warranted in assuming that such women are suffering from amenorrhœal insanity? I think not. The case, as roughly stated, gives us data for believing that both sets of symptoms, bodily and mental, are due to anæmia.

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[1] *Dictionary of Psychological Medicine*, vol. ii. p. 801.

The great objection to the cataloguing of such cases under such headings, the employment of incorrect diagnostic terms, is that it may lead to errors in treatment. My conviction is that the weight of evidence favours the conclusion that in idiopathic insanity menstrual troubles are a consequence of the general impairment of the system, and that they are not important factors in the progress of a given case. Pray do not mistake me: I do not deny that interesting phenomena occasionally present themselves in the chronic insane synchronously with menstruation, and that recrudescence and remission of symptoms may be noticed at the period. All I desire to indicate is, that such phenomena are of no great import as regards the issue of the case, and only indicate that the nervous system is liable to stimulation from slight excitants. Am I wrong when I say that the importance attached to the influence of menstruation on the course of a case of non-nervous disease is gradually waning, and that the physician does not watch its appearance with such a jealous eye as of old; crises are not anticipated as concurrent effects; and that the regularity or irregularity of the functional discharge is regarded more as an index of the general condition than as mysterious agents acting directly on the course of the case.

Another instance of mistaken relation between bodily conditions and mental symptoms is afforded in the case of diseases of the female organs of generation. So far as the graver forms of disease, such as tumours, are concerned, I may say I have never met with a case in which insanity was thereby produced. I have applied to many leading gynæcologists for their experience; amongst others, Matthews Duncan and the Keiths, and their evidence is to the same effect. Text-books on diseases of women are silent on the point. That insanity may occur alongside of uterine or ovarian tumours is most true, as a result of anxiety, uneasiness, misery, and other inevitable accompaniments; but that does not imply a peripheral irritative insanity, nor does the fact that in certain reputed cases of extirpation recovery of sanity has followed, prove any direct causative action of the tumour. For all practical purposes peripheral irritation may be dismissed from the list of producers of insanity. Did it so act, the records of surgical hospitals would afford endless examples of its morbid action on brain health.

It is of importance to note the absence of insanity as an accompaniment or sequela of certain complaints which, *à priori*, might be supposed to be prolific causes, but to which morbid mental symptoms can, in fact, be rarely referred. Insanity is never the pathological consequence of diseases of individual organs, but is occasionally more or less closely associated or connected with those forms of disease which result from diathesis or cachexia, such as tuberculosis, rheumatism, gout, and syphilis. There are many diseases painful in character and very depressing to the nervous system, such as calculus, fistula, cancer of the rectum and uterus, stricture with its often miserable complications, and many others which suggest themselves, which might be presupposed to be probable fertile causes of insanity, but which, in point of fact, are not specially inimical to brain health. They may be so indirectly, inasmuch as they prevent sleep, and produce anxiety and worry; but even in this wise their effect is wonderfully slight. Nor does there appear to be sufficient evidence to warrant the connection of insanity with diseases of the heart, liver, or kidneys. It has been sought to show that certain forms of heart disease are associated occasionally with simple or hypochondriacal melancholy, and others with mania. These observations, however, are not supported by extended clinical observation. It is true that in certain rare cases, especially in connexion with aneurism and aortic regurgitation, a maniacal delirium of short duration may present itself, due, in all probability, to anæmia of the brain; but it is doubtful whether this condition can be classed as a true insanity, except for scientific purposes, on the principle that all morbid mental manifestations should be regarded as vesaniæ. Nor does it appear to me that diseases of the liver or kidneys have any direct connection with the induction of insanity, except, perhaps, that in some forms of Bright's disease a temporary mania is rarely met with, probably the first indication of blood poisoning.

The direct production of delirium, possibly passing the arbitrary line drawn between it and mania, has been often observed, but it is very doubtful whether prolonged mania or melancholia can be clearly shown to be associated with such diseases, except as producers of psychical over-exertion of the brain.

As regards cachexiæ and diatheses, we may at once accept the factorship of syphilis. Much more doubt surrounds the question of how far rheumatism and gout can induce true rheumatic or gouty insanity,—*i.e.*, an insanity arising out of unphysiological conditions produced primarily in the nervous centres by the action of their toxic material. That they both produce alarming head symptoms, due to implication probably of the membranes of the encephale, we know; but, so far as my experience goes, supported by reference to the literature of the two subjects, permanent mental aberration is unknown. That they both may influence the course of a case of insanity may be freely admitted. The connective tissues of the brain and cord, predisposed by the diatheses to morbid change, no doubt now and then become implicated, probably in the immediate neighbourhood of blood-vessels, and by the consequent affection of sensory-motor areas and spinal segments, choreic movements are induced, and mental phenomena may result from the increase or decrease of the local condition. So far as I can ascertain, choreic movements present themselves *after* the incidence of insanity, which is hardly the sequence of events to be anticipated were the case truly one of rheumatic or gouty insanity. The history of such cases leads to the conclusion that the poison in either case attacks regions undergoing degeneration or weakening by disease; and, given vessels in a sub-inflammatory condition, the strong probability is that these toxic agents fasten on their connective tissues, and complicate the condition and the symptoms. That we have not a true insanity resulting from these two diathetic conditions is all the more remarkable, as, in at least one of them, gout, mental phenomena in the form of irritability, depression, and paralysis of energy are prodromata of the acute manifestations, disappearing for the most part with the appearance of local inflammation. As our knowledge of the pathology of tuberculosis increases, stronger probabilities arise that it may be the direct cause of insanity; but even in this case we have many secondary conditions to take into account, markedly anæmia, which prevent us coming to a definite conclusion on the subject. There cannot be a doubt that the diathesis conditions the insanity of patients in which it is present, but this fact does not support the original proposition that the disease produces morbid mental symptoms.

This excursion is warranted in order to bring more prominently under view the fact that the *post hoc propter hoc* line of argument has to be most carefully guarded against in dealing with the diagnosis of the insanities. It is of the utmost importance to the future of each case that its causation should be most carefully worked out; for not only is the original brain lesion different in kind according as it depends on over-exertion, traumatism, toxæmia, involutional and evolutional processes, and imperfect formation, but the line to be taken in treatment is indicated more or less distinctly by a knowledge of the efficient causes.

(*To be continued.*)

III.—ON THE RELATIVE PROPORTIONS OF THE TWO PROTEIDS IN THE URINE IN CASES OF ALBUMINURIA.

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Since the time when Lehman of Copenhagen first described the passage of the two proteids of the blood serum into the urine in cases of albuminuria, a good many obervations have been made on the proportions of the two proteids. These observations are extremely contradictory.

In such a research the conclusions obtained entirely depend for their accuracy upon the method used. Many of the methods used have been faulty, some entirely erroneous, and hence few of the observations are at all trustworthy.

Though Hammarsten in 1878 described the magnesium sulphate method for the precipitation of globulin, the method was very tedious, and few observations seem to have been made by it; and the work of Estelle must be entirely discounted, as he did not neutralize the urine before precipitating globulin, and hence carried down serum albumin as well.

In 1886 Dr Julius Pohl directed attention to the ammonium sulphate method, which is *entirely accurate*, and is more easily carried out than the magnesium sulphate. The total proteids are estimated by heat and the gravimetric method. In a known quantity of urine the globulin is precipitated by the addition of an equal quantity of a *saturated* solution of ammonium sulphate, the mixture being rendered acid. In twelve hours the precipitated globulin is filtered off, and the proteid in the filtrate estimated by heat. This gives the amount of serum albumin, and the amount of globulin is obtained by deducting from the total proteids the amount of the serum albumin.

Though the method is accurate it is tedious. The length of time required for the estimation of proteids by the gravimetric method probably accounts for the fact that since the method was described there have not been many observations published on the subject, and these observations are at variance with former results.

During the last three years numerous cases of albuminuria have come under my notice. The following figures show the proportions of the two proteids in the different forms:—

Acute Nephritis.—As Paton points out, in cases of albuminuria where blood is present, the proportion of globulin in the urine is very high. Cases of acute nephritis without blood in the urine are not of frequent occurrence, but in five cases I have been able to get observations on the urine.[1]

No.	T. P.	S. A.	G.	Quotient.
1.	0·70	0·36	0·34	1·05
2.	2·15	1·36	0·79	1·7
3.	1·25	0·67	0·58	1·1
4.	0·17	0·10	0·07	1·4
5.	0·26	0·15	0·11	1·3

In these cases there was no blood present in the urine, but the history of the case, the condition of the patient, and the characters of the urine, all showed that we had to deal with an attack of acute nephritis. We find that the proportional amounts of serum albumin and globulin show a remarkable constancy. In all, the proportion of serum albumin is slightly in excess of the globulin, the quotient varying from 1·05 as the lowest to 1·7 as the highest.

Numerous cases of acute nephritis and acute exacerbations of chronic nephritis, where blood is present in the urine, are to be met with. In all, the amount of globulin is high. For example, the proteids in two cases of acute nephritis with hæmaturia show—

T. P.	S. A.	G.	Quotient.
0·78	0·16	0·62	0·27
1·47	0·40	1·07	0·37

Chronic Interstitial Nephritis.—Numerous cases of this form of disease have been observed. The following twenty cases are representative:—

No.	T. P.	S. A.	G.	Quotient.
1.	0·06	0·05	0·01	5
2.	0·13	0·11	0·02	5·5
3.	0·05	0·04	0·01	4
4.	0·60	0·54	0·06	9
5.	0·65	0·60	0·05	12
6.	0·52	0·31	0·21	1·4
7.	0·22	0·14	0·08	1·7
8.	0·76	0·53	0·23	1·3
9.	0·07	0·03	0·04	0·75
10.	0·55	0·48	0·07	6·8
11.	0·40	0·32	0·08	4

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[1] In this paper the figures represent grammes per 100 c.cm. All observations were made on a specimen of the mixed urine of twenty-four hours.

No.	T. P.	S. A.	G.	Quotient.
12.	1·015	0·925	0·09	10·2
13.	1·33	1·015	0·315	3·2
14.	0·62	0·60	0·02	30
15.	0·475	0·325	0·150	2·8
16.	0·165	0·095	0·07	1·3
17.	0·44	0·39	0·05	7·9
18.	0·745	0·74	0·005	148
19.	0·06	0·06	none	—
20.	0·765	0·765	none	—

These observations were made on twenty different cases. In some cases repeated observations were made; in those the first is given here. All were undoubted cases of chronic interstitial nephritis. Excluding the last three cases, which are exceptional, and which I refer to in a paper elsewhere, we have an average quotient over the sixteen cases of 6·25.

On looking at the figures, we are struck at once with the variability of the quotient, in ordinary cases varying from 12 to 1, in exceptional cases there being a still greater difference. In cases where numerous observations were made from day to day the quotient was found to undergo variations of the most marked character.

Amyloid Disease of Kidney.—Analysis of the urine was made in four cases of albuminuria from waxy disease.

No.	T. P.	S. A.	G.	Quotient.
1.	0·49	0·35	0·14	2·5
2.	0·945	0·625	0·32	1·9
3.	1·08	0·6	0·48	1·2
4.	1·17	0·33	0·84	0·39

Here, again, there is considerable variation in the quotient The first case is of interest. The urine was that of a child with well-marked waxy disease of the liver, spleen, bowel, and kidneys, the result of long-standing hip suppuration. She was in an extreme state of emaciation, yet there was not a large proportional amount of globulin in the urine,—in fact, not nearly so large a proportion as in the second case, which shows the analysis of the urine in a case of early amyloid degeneration with phthisis, where the nutritive changes were not well marked. These observations would tend to contradict the conclusions of Hammarsten and Senator, that in waxy disease, when the nutritive changes are well marked, we always get a large proportion of globulin in the urine.

The figures, taken as a whole, would show that in waxy disease there is considerable variation in the proportional amounts of serum albumin and globulin, but that the variations are not so great as in chronic interstitial nephritis; and, secondly, that globulin is not always present in a proportionally large amount in cases of waxy disease of the kidney.

Albuminuria of Pregnancy.—Very few observations have been made on the albuminuria of pregnancy. M'Guire states that in one case he examined, the proteid consisted entirely of globulin. Professor Grainger Stewart found serum albumin present as well as globulin in one case he examined.

I have made observations in the following cases:—

Case I.—Mrs M'G. Normal labour, O.L.A.; primipara; no convulsions; no symptoms or signs of chronic kidney disease. The albuminuria disappeared during the puerperium. Urine drawn off with the catheter; clear, no adventitious matter; contains albumin; no blood, no sugar, no casts found.

$$\left.\begin{array}{l}\text{T. P.} = 1{\cdot}5\\ \text{S. A.} = 0{\cdot}8\\ \text{G.} \quad = 0{\cdot}7\end{array}\right\}\text{Quotient} = 1{\cdot}14.$$

Case II.—Mrs J. Labour normal; no convulsions. No evidence of chronic kidney disease. No heart lesion. Urine drawn off with catheter; clear; no deposit; acid; contains albumin; no blood, no sugar, no mucus or pus. Albuminuria disappeared during the puerperium.

$$\left.\begin{array}{l}\text{T. P.} = 0{\cdot}22\\ \text{S. A.} = 0{\cdot}025\\ \text{G.} \quad = 0{\cdot}195\end{array}\right\}\text{Quotient} = 0{\cdot}12$$

Case III.—E. C. Had œdema before labour. No signs or symptoms of chronic kidney disease. Labour normal. Albuminuria disappeared on tenth day of puerperium. No heart lesion. Urine drawn off with catheter; faintly alkaline; contains albumin, but no blood or sugar. No casts, pus, or mucus found.

$$\left.\begin{array}{l}\text{T. P.} = 0{\cdot}09\\ \text{S. A.} = 0{\cdot}04\\ \text{G.} \quad = 0{\cdot}05\end{array}\right\}\text{Quotient} = 0{\cdot}8.$$

A second estimation was made some days afterwards, and is of interest.

$$\left.\begin{array}{l}\text{T. P.} = 0{\cdot}08\\ \text{S. A.} = 0{\cdot}06\\ \text{G.} \quad = 0{\cdot}02\end{array}\right\}\text{Quotient} = 3.$$

In the first estimation, which is from the urine drawn off immediately after labour, while there was a good deal of œdema present, there is a very high proportion of globulin present as compared with the second, which was made at a later date, when the œdema had disappeared; the globulin was then much less in proportion. In other forms of albuminuria I have made observations on the influence of the secretory activity of the kidney on the proportion of the proteids in the urine, and in *some cases* found, as here, that with increased secretion of urine there was a marked fall in the proportional amount of globulin.

Case IV.—Mrs W. Case of delayed labour; no convulsions. No evidence of chronic kidney disease. No heart lesion. Urine drawn off with catheter; faintly acid; contains albumin, no blood, no sugar; granular casts present; no mucus or pus.

$$\left.\begin{array}{l}\text{T. P.} = 0{\cdot}30\\ \text{S. A.} = 0{\cdot}12\\ \text{G.} \quad = 0{\cdot}18\end{array}\right\}\text{Quotient} = 0{\cdot}66.$$

Case V.—Mrs G. Case seen with Dr H. A. Peddie. Had considerable œdema. Was delivered of a dead fœtus at fifth month. No evidence of chronic kidney disease.

$$\left.\begin{array}{l}\text{T. P.} = 0{\cdot}26\\ \text{S. A.} = 0{\cdot}12\\ \text{G.} \quad = 0{\cdot}14\end{array}\right\}\text{Quotient} = 0{\cdot}85.$$

Case VI.—Mrs B. Case of hydramnios; forceps; œdema of legs, but not of face; no evidence of chronic kidney disease; no heart lesion. Urine drawn off with catheter; contains albumin, no blood, no sugar, no mucus or pus; no casts found.

$$\left.\begin{array}{l}\text{T. P.} = 0{\cdot}10\\ \text{S. A.} = 0{\cdot}07\\ \text{G.} \quad = 0{\cdot}03\end{array}\right\}\text{Quotient} = 2{\cdot}3.$$

The analysis of these cases shows, as in other forms of albuminuria, a considerable variation in the quotient. The average shows a large proportional amount of globulin,—indeed, a larger proportional amount than in any other form of albuminuria. In none was there blood present to account for the high proportion of globulin.

Albuminuria of Heart Disease.—It is not an easy thing to get cases where the albuminuria appears to be due, not to chronic kidney disease, but to errors in circulation. I made observations on three cases, however, where neither from the history nor from the physical examination could any evidence of kidney disease be found, but where there was a cardiac lesion with albuminuria. The urine gave—

No.	T. P.	S. A.	G.	Quotient.
1.	0·06	0·04	0·02	2
2.	0·26	0·20	0·04	5·5
3.	0·16	0·10	0·06	1·6

In these cases the proportion of serum albumin to globulin was not high, the average being 3·03.

So far as I know, only one observation has been made on the albuminuria of heart disease, by Dr Noël Paton. His two cases varied very much. In one the globulin was very high, in the other so small in amount as not to be estimable. In the cases I met the figures seem to be fairly constant, the globulin being in considerably smaller proportion than the serum albumin, but in larger amount than found in the average case of chronic interstitial nephritis.

From the above observations the following general conclusions might be drawn:—

1. That in albuminuria both the proteids of the blood and serum are present as a rule, but there are certain exceptional cases where this does not hold.
2. That we cannot diagnose the form of kidney lesion from the proportions of the two proteids in the urine.
3. That the proportions of serum albumin and globulin may vary widely in albuminous urine.
4. That even in amyloid degeneration, where the patient is very emaciated, the globulin may not be in excess.
5. That in the albuminuria of pregnancy, both serum albumin and globulin are present, the tendency being for the globulin to be in a proportionally large amount.
6. That in the albuminuria of heart disease, where there is no chronic kidney disease, the globulin is usually in larger proportion than is commonly found in chronic interstitial nephritis.
7. That in acute nephritis, where there is no hæmaturia, the serum albumin and globulin are, as a rule, about equal in proportion; but when there is blood in the urine, the globulin is proportionally large in amount.

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IV.—RECENT GASTRIC LITERATURE.

By A. Lockhart Gillespie, M.D., F.R.C.P. Ed.

A complete review of the literature which has been published during the last year in connexion with diseases of the intestinal tract would be a labour of some difficulty and of considerable length. In these days of innumerable journals, and still more numerous investigators, the writings on this one subject alone are more than can be comfortably assimilated. The predominating impression, however, which may be gathered from a perusal of some of the papers bearing on this subject, is that a large mass of evidence is being rapidly accumulated in support of those methods of practical examination of the accessible contents of the alimentary canal, which have comparatively recently been published, and which are, even now, really on their trial.

Of the different problems involved none is of greater interest than that which concerns the origin, diagnosis, and treatment of gastric ulcer. One of the most valuable contributions comes from the pen of Dr Boas, Berlin ("Certain New Views concerning the Diagnosis and Treatment of Round Ulcer of the Stomach," *Medical Record*, June 17, 1893). After describing the ordinary diagnostic signs and symptoms, the frequent co-existence of chlorosis, the hyperacidity especially due to hydrochloric acid, and the localized pain in the epigastrium, all of which may be due to some other condition, he alludes to a test which he looks upon as almost pathognomonic. A sharply circumscribed zone, pressure on which causes sharp pain, is in such cases frequently located at the level of and to the left of the tenth to the twelfth dorsal vertebra, rarely higher or lower. The painful area usually lies directly against the vertebræ, seldom at a slight distance. Sometimes a similar area may be found on the right side, either separately or along with one on the left. Such painful points may also be defined in gastric neurosis, in malignant disease of the stomach or œsophagus. They do not exhibit, however, such a fixed character, and may even be found as high up as the cervical region. In cholelithiasis, again, an important diagnostic painful area is to be found on the right of and close to the twelfth dorsal vertebra. The painful spots so frequently noted in muscular rheumatism, pleuritic effusions, and caries of the vertebræ cannot be confounded with the above, the other symptoms being sufficiently distinctive. Dr Boas, to estimate the amount of algesia at these spots, uses an instrument which he terms an "algesimeter." By means of this he can accurately determine the amount of pressure requisite to cause pain either on the epigastric region or on the dorsal area above described, and by comparing the increase or decrease of the pressure required is able to gauge the result of treatment.

With regard to the treatment itself, if the Leube-Ziemssen method is not successful, Dr Boas strongly recommends a persevering trial of silver nitrate, beginning with gr. iij.–℥iv., and rising to gr. vj.–℥iv., in tablespoonful doses. If this be ineffectual, rectal alimentation should be tried, nothing being given by the mouth. Fourteen days of this is quite sufficient. I have found, however, that a little milk given by the mouth, when the injections are used, often assuages the pain which may be caused by the reflex secretion of gastric juice.

Dr Curnow (*The Clinical Journal*, April 12, 1893) adds to the nutrient enemata used in such a case seven minims of laudanum. He does not give suppositories, since he discovered in the rectum of a patient who had died more than twenty of these articles undissolved.

The fact that the stomach contents as a rule contain a larger percentage of hydrochloric acid in cases where a gastric ulcer is present than they do normally, continues to be very generally corroborated. Elsner (*New York Medical Journal*, May 20, 1893) comes to the conclusion that in two-thirds of all cases there is an excess of HCl, while in the remainder the acidity may be normal or subnormal, or as Ewald (*Klinik der Verdauungs Krankheiten*, 2nd ed., Bd. ii. s. 232) puts it, "the gastric juice always contains HCl in cases of gastric ulcer, and usually an excess of it;" while Riegel, writing of the same matter ("Zur Lehre vom Ulcus ventriculi rotundum," *Deutsche Med. Wochenschrift*, 1886, No. 52, s. 931), expresses the opinion that "on account of the hyperacidity an erosion or injury of the mucous membrane, trivial in itself and tending to rapid repair, attains a greater significance; it heals more slowly or the ulcer spreads."

Two interesting papers may be noted here dealing with the more remote effects of gastric ulcer. Sidney Coupland (*The Clinical Journal*, March 15, 1893), in a clinical lecture on this subject, gives the details of a case diagnosed during life as one of pouching of the stomach from cicatrization of a large ulcer, in which the symptoms of anæmia and cachexia were so profound as to imitate malignant disease. Another case with symptoms identical with those of cancer died, and post-mortem a chronic inflammatory state of the mucous membrane of the stomach with the remains of old ulceration was found. The lymphatic glands in the vicinity were all enlarged, but only with fibrous tissue. Unfortunately the stomach contents were not analyzed in either patient, as Dr Coupland is chary of passing a stomach tube in such cases. A still more interesting case, however, will be found in the No. 31 *Bulletin of the Johns Hopkins Hospital*, vol. iv., where Dr W. S. Thayer gives a short account of the history, symptoms, and the autopsy of a patient suffering from cicatricial stenosis of the pylorus following peptic ulcer. During life the presence of an ulcer did not seem probable, from the absence of pain and the want of free hydrochloric acid in the gastric juice. Unluckily quantitative estimations of the acids present were not attempted. The patient was only 22 years old and appeared anæmic, but the number of corpuscles in her blood was 4,630,000, and the amount of hæmoglobin 69 per cent. Dr Thayer incidentally calls attention to the fact that in the anæmia dependent on carcinoma of the pylorus the red blood corpuscles are frequently increased in number and the hæmoglobin in amount, the volume of the blood being smaller than normal. As the patient was emaciating rapidly and did not improve either on Condurango, nux vomica, or nutrient enemata, Dr Finney performed gastro-enterostomy with, temporarily, a successful result, although dysentery carried her off fourteen days later.

In two very marked cases of cicatricial stenosis of the pylorus following on the same condition as in the above, which I have seen and examined, one of which came to an autopsy, the acidity of the contained and retained food in the consequently dilated stomach was extremely high, reaching in one case ·536 per cent. as HCl, in the other ·489 per cent., free HCl being abundantly present. In the fatal case death was preceded by muscular twitchings and convulsions. Kriege (*Berlin. Klin. Woch.*, No. 49, December 5, 1892) records a case in which recovery took place after the rupture of a gastric ulcer. Laparotomy was performed. The ulcer was at the cardiac end of the organ.

The etiology of hyperacidity is a fruitful source of theory. Many of those, however, who discuss the subject forget to distinguish sufficiently between hyperacidity, caused by diminished HCl secretion, and hyperacidity, due to increased secretion of that acid,—*hyperchlorhydrie,* as the French have it. The normal acidity of the gastric juice—from ·25 to ·3 per cent.—is looked upon by Bunge and others as almost exactly the amount necessary to make the food aseptic. That calculation, however, was made on the supposition that all the acidity of the gastric contents was available for this purpose. But, as I have shown elsewhere (*Journal of Pathology and Bacteriology,* Jan. 1893), the hydrochloric acid combined with proteids has little antiseptic power compared with the originally free acid, and that, therefore, the normal acidity of the gastric contents will allow the more resistant of the micro-organisms swallowed with the food to survive, and that, also, this combined acid does not inhibit the conversion of starches and sugars so powerfully. L. Wolff ("The Dyspepsia of Hyperacidity," *Medical News,* May 27, 1893) overlooks these facts, and he also states that the pancreatic ferments are inactive save in an alkaline medium, a statement which I also believe to be incorrect. He regards the hyperacidity—meaning by this increase of HCl over the normal—as produced "by special irritations, as psychical strain, ingestion of acid and irritant substances, and also very often after smoking, especially of very strong tobacco." The word which I have underlined is very misleading, for it requires a large quantity of acid in the ingesta to cause hyperacidity,—indeed, I could well believe that the more acid the food the less HCl is secreted. The diet he recommends is chiefly proteid in character, with absence of salted foods, and, indeed, as great a diminution of the salt taken as is possible. The treatment consists of lavage, the giving of diluents and of alkalies before meals. In his hands alkalies before meals have been better borne and of greater efficacy than when given after. I suppose that he believes in alkalies given before food reducing the acidity of the gastric contents after meals. Unluckily for this theory it has long been understood that alkalies given before meals have a very considerable power of causing an increased secretion of HCl when food has been taken. Ringer states so in his book. Linossier and Lemoine ("Contribution à l'étude de l'action des alcalins sur la digestion gastrique chez l'homme," *Archives Générales de Médecine*, Juin 1893), however, have conclusively proved in a very careful series of observations, made on a man the subject of rumination, that bicarbonate of soda in doses of from 1 to 10 grammes increases gastric secretion, the maximum effect being produced by the administration of 5 grms. of the drug one hour before the meal; and that while the smaller doses only excite the secretion of HCl in a fugitive manner, the larger doses do so more persistently. After meals the increase in acidity is not so marked. Here, then, we have it proved, in the clearest manner possible, that alkalies are the very worst drugs to exhibit in hyper-acidity,—the present effect is fleeting, the future aggravates the condition.

The authors, in addition, found that the action of the alkali is prolonged beyond the period of administration. Their contention that alkalies, especially the bicarbonate of soda, are the drugs *par excellence* for use in insufficient secretion of HCl is, on the other hand, not a logical induction from their experiments, for the stomach cells in such cases are already incapable of responding to the stimulus afforded them by the food, and drowning them in an alkaline solution would still more effectually quench their secreting power. In some cases small doses before meals would probably bring about the result required, especially if the lowered acidity be due to nervous causes. Where the insufficient gastric secretion is due to local degeneration little good can result.

This gastric anacidity is the subject of a paper by Dr Allen A. Jones (*New York Medical Journal*, May 27, 1893), in which he very properly points out that however one may despise the stomach *quâ* a digestive organ, in such a state of its secretory powers the whole task of digestion is imposed on the intestine, which soon becomes incapable of performing it perfectly. *Ergo*, the stomach must have some digestive action. He forgets the result of the unfettered passage of micro-organisms into the intestinal tract under such conditions. This alone, however, could not cause all the symptoms observed. After detailing one or two cases in which the contents of the stomach were either neutral or only very slightly acid, Dr Jones gives some rules for treatment. He advocates an attempt to re-establish gastric digestion by giving copious doses of HCl, with pepsin if necessary. Nux vomica and physostigma may be given also if required. He thus exactly reverses the procedure recommended by Robin (*Brit. Med. Journ.*, 1892, i. p. 283), who would try the nux vomica first, and then, if it did no good, exhibit the acid. Dr Jones also advises the ingestion of much common salt and salted foods, the employment of lavage with a weak solution of sodium chloride (Löwenthal, *Medical Week*, Jan. 6, 1893, recommends a 0·6 per cent. solution), and the use of both galvanic and faradic currents of electricity to promote the secretion of acid, the faradic also stimulating the motility of the gastric walls.

Sir Dyce Duckworth (*Clinical Journal*, June 4, 1893) is pleased to be facetious over the withdrawal and examination of the stomach contents in cases of dyspepsia. He calls it a dirty, unpleasant job. The dirtiness depends entirely on the performer, and it is not so unpleasant as many other routine duties a practitioner may be called upon to perform. He alludes to the fact that HCl is diminished in Cancer of the Stomach, the subject on which he writes, but is satisfied with this knowledge, and wishes no further local chemical information. For medicines he finds creasote in minim doses, or a similar quantity of pure carbolic acid, the most useful.

Einhorn (*New York Medical Journal*, July 8, 1893) gives some further experiences with direct electrization of the stomach with his deglutable electrode. The details of his treatment of thirty-one cases by direct gastro-faradization, and of eight cases by direct faradization and then by direct galvanization of the stomach, show that in many cases, after such applications, free HCl appeared where there had been none before, and that the distressing symptoms were generally relieved. What diet and medicinal treatment, if any, these patients got does not appear. Three cases were also treated simply by direct galvanization of the stomach, with good results. He thinks, therefore, that secretion and absorption of the stomach are increased by direct electrization, that it is a potent agent in chronic (non-malignant) diseases, especially in dilatation and enteroptosis, and that it is "almost a sovereign means of combating severe and most obstinate gastralgias, no matter whether their origin is of a nervous nature or caused by a cicatrized ulcer of the stomach."

Dr Charles Stockton ("Gastric Neuroses," *International Clinics*, second series, vol. iii.) also advocates electricity for use in treatment of such gastric complaints. He divides the hyperacidity of neurotic origin into—(*a*), uniform increase of HCl; (*b*), increase of HCl, coupled with dilatation of the stomach; and (*c*), excess of HCl one day, diminution the next; while the motor neuroses are divisible into those occasioning a lack of motility or an excess of the same, or premature relaxation of either orifice of the stomach.

Dr Einhorn states (*loc. cit.*), as will be seen above, that he can induce by means of direct electrization of the stomach an increased absorption by the mucous membrane of that organ. Now it is still a moot question whether the stomach absorbs fluids to any extent at all. I believe that it does so very considerably in health. Professor Dr J. von Mering, however ("Ueber die Function des Magens," *Forschritte der Medicin*, No. 14, July 15th, 1893), has set himself to answer this question. Experimenting on large dogs, he opened the abdomen, cut across the duodenum not far from the pylorus, and formed a duodenal fistula. A finger introduced through the pyloric ring could feel it open and close twice to six times in a minute, while on each occasion 2 to 15 c. cms. of fluid were discharged. He then introduced 440 c. cms. of water into the stomach. The following table gives the amounts evacuated through the pylorus:—

Minutes after.	Amount in c. cms.	Number of expulsions through Pylorus.
0–5	120	10
5–8	35	10
8–15	185	20
15–20	90	18
20–30	15	1, fluid slimy.
	445	59

No absorption had, therefore, taken place.

300 c. cms. of a 25 per cent. solution of alcohol were then introduced.

Minutes after.	Amount in c. cms.	Reaction.	Alcohol per cent.
0–10	105	Neutral.	10·5
10–15	77	,,	9·5
15–35	109	Acid.	5·2
35–60	130	,,	2·7
60–90	75	,,	1·0

Or in all 496 c. cms. were recovered, an increase of 196 c. cms., the contained alcohol, however, being only 28·2 c. cms. instead of 75 c. cms. Fluid had been secreted while alcohol was absorbed.

In conclusion, Dr v. Mering finds that the stomach absorbs very little water, but a considerable quantity of sugar, alcohol, and peptones, while it *neutralises* HCl if that be given in water on an empty stomach. He argues from this, that in cases of dilated stomach due to contraction of the pylorus little but concentrated food should be given, and lavage practised afterwards. His experiments would have been more convincing if he had given the animals food in a solid form, as well as in solution.

That curious disturbance of the gastric chemistry known as hypersecretion of a hyperacid juice, sometimes called Reichmann's disease (Reichmann, *Berlin. Klin. Wochen.*, 1886, Nos. 32 and 33), has had some attention directed to it lately. A Russian practitioner, Dr Voinovitch (*Sémaine Médicale*, 1892, lxvi.), advocated the use of atropine in its treatment, while in a later number of the same journal Bouveret of Lyons and Devic are said to have been unable to observe any remedial action from that alkaloid. In the same place Dr Fostanini of Turin and Drs Leubuscher and Schoeffer are quoted as having found that atropine was of considerable use for a short time, but that it hinders digestion if persevered in. The last two observers found also that morphine, given hypodermically, diminishes the secretion of HCl both in health and in Reichmann's disease, while it does not do so when given by the mouth. Hitzig (*Berliner Klin. Wochenschrift*, No. 49, Dec. 5, 1892) obtained the same effect from the administration of morphia. Dr Thayer has reported a case of this affection in the *Johns Hopkins Bulletin* for December 1892, in which lavage and a diet chiefly made up of albuminoids relieved the symptoms.

During the meetings of the Société de Thérapeutique held in Paris in the months of November and December last year, very considerable friction and heat were caused by the question of the treatment of hyperacidity and hypersecretion. Dr Bardet advocated easily-digested articles of food and gastric antisepsis with benzo-naphthol, etc., Dr Huchard recommended large and continued doses of alkalies, Dr Bouchard albuminoids, Dr Dujardin Beaumetz a strictly vegetarian regimen, while Dr Bovet found benefit from the use of raw meat pulps with the addition of small quantities of vegetables!

The physiology and chemistry of gastric digestion have not been added to very extensively. A new method for the estimation of HCl has been published by Lüttke ("Eine neue Methode zur quantitativen Bestimmung der Salzsäure im Mageninhalt," *Deutsche Med. Wochenschrift*, 1891, No. 49, with a fuller account in *Die Magensäure der Menschen*, Martius und Lüttke, p. 101). It depends on the precipitation of all the chlorides with a strongly acidulated solution of silver nitrate. Several fundamental facts have been overlooked in the process recommended, and it seems, on the face of it, entirely fallacious. Some observations have been made by Contejean ("Contribution à l'étude de la Physiologie de l'estomac," *Journal de l'Anatomie et de la Physiologie*, i., 1893) on the surety of the presence of HCl in the gastric juice, by means of a reaction with carbonate of cobalt. It is rather late in the day to prove the presence of HCl. J. W. Pickering ("On Certain Proteid and Albuminoid Reactions and their Significance," *Journ. of Physiology*, vol. xiv., No. 6, p. 347) reviews the different tests for proteids, and endeavours to prove that in each there is a hydrobenzene nucleus, and that the various proteids only differ from each other by re-arrangements of the atoms in their molecules. C. A. Pekelhäring

(" Ueber das Pepton Kühnés," *Centralblatt für Physiologie*, April 22, 1893, Heft 2), in a paper he has kindly sent me, falls foul of Kühne's definition of pure peptone. He described it as that proteid which is not precipitated by a boiling saturated solution of ammonium sulphate. Pekelhäring, however, points out that the addition of ammonia to the boiling and saturated filtrate of the above often precipitates a substance on cooling with the characteristics of an albumose. He goes so far as to state that " peptone is only a name by which commercial preparations from the digestion of albumin are indicated. This word does not imply, in our present day terminology, a chemical entity." Kühne replies to him in his *Zeitschrift für Biologie*, admitting the occurrence of the precipitates, but denying that they affect his position. It seems to me more than likely that in time we will be able to separate out many more albumoses, probably in a regular descending series, from that which is now termed deutero-albumose to a substance which may prove ultimately to be pure peptone.

I will not add more to this already too long survey of the subject than the names of some papers on intestinal dyspepsia and fermentation. Dr J. Leva (" Ueber das Verhalten der Magenfunctionen bei verschiedenen Leber Krankheiten," *Virchow's Arch.*, Bd. 132, Heft 3, S. 490) finds the acidity and power of the stomach diminished in cirrhosis and cancer of the liver. Dr Géza Gara (" Beiträge zur Kenntniss der pathologischen Veränderungen der Darmfaulniss," *Ungarisches Archiv für Medizin*, Bd. i., s. 288) gives the proportion of sulphates to the ethereal sulphuric acid in the urine as nearly equal in chronic, as very dissimilar in acute, intestinal catarrh. Fleiner (*Sémaine Médicale*, Jan. 25, 1893) praises Kussmaul's method of injecting large enemata of pure olive oil in obstinate constipation. Forcheimer of Cincinnati has a short paper in the *American Journal of the Medical Sciences*, July 1893, on the intestinal origin of chlorosis, in which he places the principal seat of the formation of hæmoglobin in the intestinal tract, and states that antiseptics—salol or hydro-naphthol—act most efficaciously.

V.—THE GEOGRAPHICAL DISTRIBUTION OF GOITRE.

By ALLEN THOMSON SLOAN, M.D.

THOUGH Switzerland is perhaps the one district in Europe where goitre is most common, yet it is by no means confined to that country. Ancient authors show that it occurred in Lombardy, Thrace, and among the Apennines in their day. More modern observers have noted its existence amidst mountain ranges so distant as the Urals and the Pyrenees; in countries so remote as Norway and Italy, Belgium and Turkey, Russia and France; while Germany, Austria, and other intervening States are far from being exempt from this widespread disease. It is not to Europe, however, that goitre is limited, for it affects the New World and other parts of the Old. In Asia and Africa travellers have described the strange swellings of the throat with which many of the inhabitants are afflicted; and by them also we are told that the disease, which is common in Canada and endemic in the Rocky Mountains, is still more prevalent in Brazil and Peru among the lofty chains of the Cordilleras and Andes. Occurring alike in the icy steppes of Siberia and the burning plains of India, common at heights thousands of feet above the level of the sea, goitre also attacks the inhabitants of ocean-girt islands, and equally affects the mild-tempered Singhalese and the fierce dyaks of Borneo, Sumatra, and Java. It is interesting to read the accounts of the travellers themselves, and a few of them I shall narrate here.

As far back as the beginning of the thirteenth century, Marco Polo, the famous Venetian voyager, writes in Chapter 35 of his wonderful account of his travels as follows:—"Yarcan is a province five days' journey in extent. The people follow the law of Mahomet, but there are also Nestorian and Jacobite Christians. They are subject to the same prince that I mentioned, the great Kaan's nephew. They have plenty of everything, particularly of cotton. The inhabitants are also great craftsmen, but a large proportion of them have swollen legs and '*great crops*' at the throat, which arises from some quality in their drinking water" (Col. Yule's translation, 1871).

Thomas Gage (*New Survey of the West Indies*, 1648), in his journey from the city of Chiapa to Guatemala, describes his sojourn at a place called Sacapula thus:—"The more I hastened to that seeming paradise the more did the twinkling and wanton streams invite me down the hill, which I had no sooner descended, but I found in an harbour by the water-side the Prior of Sacapula himself, with a good traine of Indians, waiting for me with a cup of chocolate. At the first sight I was a little daunted to behold the Prior, who looked most fearfully with a '*bladder from his throat*,' swelled almost round his necke, which hung over his shoulders and breast, and stayed up his chin, and lifted up his head so, that he could scarce look any whither but up to heaven. In our discourse he told me that disease had been upon him at least ten years, and that the water of the river had caused it to him, and in many others of that town. This made me now as much out of love with the river as above the hill I had liked the goodly sight of it, and therefore resolved not to stay so long in that place as I had thought, lest the waters should make me for all my life as they had done this Prior, whose name was Fryer John De la Cruz, a Biscaine borne, and (like some of that nation) a little troubled with the simples, but a good-hearted man, humble, and well-beloved all over the country both by Spaniards and Indians. When I came to the towne I discovered many men and women with bladders in their throats like the poore Prior, which made mee almost unwilling to drink there any chocolate made with that water, or eat anything dressed with it; untill the Prior did much incourage mee, and told mee that it did not hurt all, but onely some, and those who did drink it cold."

Mungo Park (*Travels in the Interior of Africa*, 1799), writing of the diseases of the Mandingoes, who inhabit the territory around the banks of the Gambia, mentions that "goitres are very common in some parts of Bamballa, and that the negroes attribute this disease to the water taken from wells."

Mr Marsden, in his *History of Sumatra* (1811), says:—"The natives of the hills, through the whole extent of the island, are subject to those monstrous wens from the throat which have been observed of the Vallaisons and the inhabitants of other mountainous districts of Europe. It has been usual to attribute this affection to the badness, thawed state, mineral quality, or other peculiarity of the waters, many skilful men having applied themselves to the investigation of the subject. My experience enables me to pronounce, without hesitation, that this disorder is immediately connected with the hilliness of the country, and, of course, if the circumstances of the water they use contribute thereto, it must only be so far as the nature of the water is affected by the irregularity or height of the land. But in Sumatra neither snow nor other congelation is ever produced, which militates against the most plausible conjecture that has been adopted concerning the Alpine goitres. From every research I have reason to conclude that the complaint is owing among the Sumatrans to the fogginess of the air in the valleys between the high mountains, where, and not on the summits, the natives of these parts reside. The cold morning mists may also produce tumours in the throat. The Sumatrans do not appear to attempt any remedy for it, the wens being consistent with the highest health in other respects."

In Warden's *Account of the United States* (1820) it is stated that Dr Barton observed many cases of goitre in the Onendago valley, in the neighbourhood of the Mohawk river (New York State). In Pennsylvania goitre is said to prevail to a slight degree in the neighbourhood of Pittsburg. In Ohio, Dr Forsyth observes that this disease is common and endemic at the confluence of the Alleghany and Monongabela rivers.

Dr Smith (*Edin. Med. Journal*, 1842), writing on the "Diseases of Peru," refers to goitre as follows:—"The goitre is a disease principally confined to the central valleys of the Andes. The coto, goitre, and wen which appears on the forepart of the neck sometimes attains a very large size, and affects individuals of the white race, especially fine-complexioned females. Women of Indian or Mestizoe race are less liable to it. Indeed, I do not recollect ever to have seen an Indian, either male or female, affected with it. In Conchucos we are told the disease is not uncommon, though not so frequent, perhaps, as in the vale of Huanuco; but in either district it shows itself with preference in the more delicate organization of families of European descent. Those affected by this disease are sometimes dumb, but in general the faculty of speech is not affected, and the mind is perfectly sound and unimpaired. Regarding the causes which produce goitre in Peru I can affirm nothing satisfactory, only I may remark that it is certainly not a disease of the snowy range, but rather of the temperate and warm valleys, in which the natives are found to refer the origin of the disease to their using turbid water during a considerable part of the year, when it snows and rains upon the loftier mountains."

Bennet, in his *Ceylon and its Capabilities* (1843), remarks:—"The Swiss complaint goitre is by no means uncommon at Galle, but the cause must be very different from that to which it is attributed in Switzerland,—namely, the use of snow-water. I have never seen a European or native male afflicted with it, although it is not uncommon with native females, whose guttural protuberance renders their appearance very disgusting. All Europeans who reside in the fort have a prejudice against the water from springs."

Sir George Simpson, in his *Narrative of a Journey Round the World* (1847), writes:—"As we advanced on our voyage through Siberia, that very disagreeable complaint, the goitre, became more and more prevalent. Other maladies, also of the blood and general system, were very common. Noses, in particular, appeared to have been almost decimated."

Dr Stratton (*Edin. Med. Journal*, 1848) says, in his article "On the Diseases of the North American Indians," he has not seen goitre among them in Canada in the neighbourhood of Lake Huron, although it prevailed among other races in the same neighbourhood.

I am informed by a gentleman long resident in the country that at the present day goitre is very prevalent among the French Canadians of Lower Canada, between Quebec and Montreal, on a soil the geological nature of which is blue limestone.

Special Distribution in England and Scotland.

Goitre in England.—In Derbyshire goitre prevails to such an extent that it is proverbially known as "Derbyshire neck," but it is by no means uncommon elsewhere. Dr Manson has noted its frequency at Nottingham; while Dr Inglis (*Treatise on Bronchocele*, 1838) shows how common it is in various parts of Yorkshire. Mr Bayers refers to its occurrence at Appleby; and in other parts of Westmorland I can testify to its occasional prevalence. In Keswick and the surrounding country Dr Black informed me that many families are affected with goitre; while in the neighbourhood of Penrith, Cumberland, in one year I have seen at least thirty cases. I am told it occurs quite as commonly in the practice of the other medical men of that town. According to Dr Reid

(*Edin. Med. Journal,* 1836), it is very common in Buckinghamshire, and is far more frequent in London and its vicinity than is generally supposed. In Hampshire, Norfolk, Sussex, Surrey, Monmouth, Somerset, in some parts of Northumberland and Cumberland, and in the hilly parts of Staffordshire, goitre is reported to exist to such an extent as to be fairly considered an endemic disease.

In Wales it is by no means infrequently seen, and Mr Holbrook says that in that country "it does not appear that those who reside in valleys are more subject than those who live in elevated situations."

Goitre in Scotland.—Goitre has been usually considered in Scotland to be a very rare disease, but I have no doubt that careful observations would show that it is much more common than is generally supposed. Dr Reeve (*Edin. Med. Journal,* 1809) refers to its being seldom met with in Scotland. Dr Marshall (*Edin. Med. Journal,* 1832) remarks that it is said to occur in Perthshire. Dr Reid, in the same Journal, 1836, says:—"I have never met with the complaint in the hilly tracts of Scotland, though it is said that in a small sheltered village in the Isle of Arran it, as well as cretinism, is to be found." St Lager refers to this fact, mentioning that it occurs on the east side of the island, notably towards Shiskim (*Du Cretinisme,* St Lager). Dr Inglis (*Treatise of English Bronchocele,* 1838) states, on the authority of reports from medical brethren, that in the north and west of Scotland goitre is almost unknown, and that personal observation convinces him that in the south of Scotland it is hardly ever met with. At Penicuik, however, he saw twelve cases, and at Dollar a few more, but he concluded that it was confined to no shire in particular. To Dr Arthur Mitchell we are indebted for the following information (*Brit. and Foreign M. C. Review,* 1862):—"Goitre exists nowhere in Scotland as an endemic disease except in the southern counties. The extent of the district which it occupies may be laid down as including the greater part of Roxburgh, the upper parts of Selkirk and Peebles, the eastern parts of Ayrshire where it touches Lanark and Dumfries, the upper districts of Lanark, the whole of Kirkcudbright and Dumfries, the west of Berwick, and the east parishes of Wigtown. The endemicity reaches a maximum in the upper valley of the Nith, and hence the term applied, 'Nithsdale neck.'" From personal observation I can testify to its occurrence as an endemic disease at Wishaw, Lanarkshire, where in a period of five months I collected twelve cases, which were published in the *Edin. Med. Journal* for July 1883, with some remarks as to their probable causation. In the August following I saw four or five additional cases; and Dr Cowan informs me that he and his assistant still occasionally meet with goitrous patients in their practice. At Peebles, also, I have seen many cases of goitre; and Dr Tod, who has several times acted as *locum tenens* for the late Dr Ferguson of that town, tells me it is unusually prevalent in the surrounding country. In Fife I have seen several cases, and notes of others have been sent me by various medical friends. In regard to other counties I have no special knowledge; but I think the above evidence shows that it is quite justifiable to maintain that goitre exists in Scotland as a truly endemic disease.

VI.—CASE OF ACQUIRED TUBERCULAR DISEASE OF HIP AND SHOULDER JOINTS.

By A. G. Miller, F.R.C.S.E., Surgeon to the Edinburgh Royal Infirmary.

M. B., aged 13, nursemaid, admitted to Ward 25, medical, 23rd February 1891; then to Ward 33, medical, 25th April 1891; and transferred to Ward 17, surgical, 12th May 1891.

Complaint.—Pain in left hip and powerlessness of left arm.

Report of Case and History taken, by kind permission, from Dr Wyllie's Case-books.

"*Present Illness.*—Three months ago patient was quite strong and healthy. On Sunday night, January 18th, 1891, patient went to bed, feeling perfectly well, as usual. On Monday morning she wakened about 6 A.M. (her usual time for getting up), and felt she could not rise on account of a very severe pain in her left hip. This pain was so severe as to prevent her moving the leg. Her mother got her up, but patient had to go back to bed again, being unable to walk, or, indeed, to make the slightest movement. The pain at that time was confined to the left hip. It was not so bad when she lay still, but the slightest movement caused agony. It continued all Monday, but did not keep her from sleeping that night. Patient's mother called in a doctor on Tuesday, who treated her for lumbago, without any improvement. She was not, the mother states, feverish at this time, but about a fortnight ago she began to be feverish and to sweat very heavily on any exertion, such as the effort to rise.

"Patient gradually got worse, and about a fortnight after the beginning of her illness she was taken to the Royal Infirmary, and admitted to Ward 25 under the care of Professor Stewart. She was able to walk when she was admitted, though with a limp, but after she had been in Ward 25 for three weeks she could no longer walk, the pain being very much worse. She continued to get worse after leaving the Infirmary, and she was seen by another doctor four weeks ago. He put her under chloroform and proceeded to examine her leg. Patient's mother states that he found nothing wrong with the leg, but that something was wrong with her head. He advised her removal to the Infirmary, but his advice was not followed at that time, because patient had already been in the Infirmary. A fortnight ago her feet began to swell, but they did not swell very much. Patient was seen by a third doctor, who recommended her to Dr Bramwell; she was therefore admitted to Ward 33 on April 25th, 1891.

"*Previous Health.*—Up to the beginning of this illness patient was very healthy. When a child patient had measles and scarlatina; she has had no other illness. Patient began work as a nurserymaid six weeks before her illness began. She, in her situation, slept in a very cold room—somewhat damp—being in a sunk flat. She was in perfect health, her mother states, when she went there.

"Patient did not care for underdone meat, and often did not eat it on account of its being underdone. Patient used to complain a good deal of 'growing pains.' The boy whom patient nursed and looked after was 'riddled' with tuberculosis.

"*Family History.*—Father alive and healthy, æt. 50; has never had any serious illness. Mother alive and healthy; has never had any rheumatism. Patient has two sisters, 22 and 20, both strong and healthy; one sister died of scarlatina when æt. 6½. Three brothers are dead—one from scarlatina 2 years old; another died when 20 months old of infantile diarrhœa; the third died æt. 5 months."

Extracts from Case taken in Ward 25 (Prof. Stewart), on February 24th, 1891.

"*Time, Mode of Origin, and Course of Present Illness.*—She attributes the beginning of her trouble to a cold, draughty room in which she slept while acting as nurse. Five weeks ago she complained of pain in the small of her back, which came on suddenly, the character of which she could not describe; but on suggesting two or three kinds of pain, the patient chose that of a dull aching character. She says she felt the pain working in her left thigh at the same time. On waking in the morning her back and left leg felt very stiff, so that she could not move the latter. Her mother arrived and applied hot turpentine cloths to her back, with only temporary relief. A doctor was called in and said she had lumbago, and prescribed powders which had a bitter taste. They seemed not to give much relief. On the third day, not feeling any better, her mother removed her home. Patient got up and walked to the door, but was unable to go further, so she was carried upstairs to her own house. She did not go to bed immediately, but sat in a chair till the evening. She slept well that night. A day or two afterwards she felt pain in her left shoulder, which was aggravated by movement of the joint. Her mother applied hot irons to her back in the evening, which, patient says, removed the pain in that quarter, and from the thigh partially. When she got up out of bed she sometimes felt very stiff, but other times much less so. During the course of the illness she felt the stiffness increasing, but during the last week or so there has been an improvement. She can now move about in bed with more ease and less pain. At present, while lying in bed, she complains of nothing but the inability to move the arm at the shoulder and the leg at the hip.

"*State on Admission.*—General Facts: Patient is round and plump, and well developed generally. Muscularity: Muscles are well developed.

"*General Appearance.*—Features regular, well formed, with a ruddy, healthy complexion and pleasant expression. Attitude: Lies on her back, and sometimes on her right side.

"*Alimentary System.*—Bowels quite regular, but she required an aperient two days after she came into hospital. Abdomen on Palpation: No tenderness or anything abnormal could be detected —this system otherwise normal.

"*Nervous System: Sensory*—No pain while lying quiet in bed. Sensibility to touch, heat, tickling, and pain are equal on both sides. Sight good; pupils equal. Hearing, taste, and smell normal. *Motor*—Organic reflexes normal; skin reflexes well marked; tendon reflexes equal on both sides. *Voluntary*—Left Forearm: Flexion, extension, pronation, and supination performed lazily. Left Upper Arm: Power of abduction completely gone. If the limb be abducted she still retains the power of adduction, but imperfectly. Forward movements almost gone. Backward movements still persist, but weak. Left Lower Limb: Flexion at knee joint a little retarded. Partial flexion at hip joint when flexing the knee joint, but no power of flexing the limb as a whole. Abduction and adduction at hip still present, but movements slower than normal on passive flexion of the thigh on abdomen. Pain is felt in the line of the femur a little below the great trochanter. Spine: Lower two cervical vertebral spines prominent. Lower dorsal especially prominent, with slight lateral curvature to the right.

"*Locomotory System.*—Joints: Left shoulder, pain on movement, but especially on pressure over the joint posteriorly at one point 1 inch below the acromial end of spine of scapula.

"Mobility impaired.

"Muscles of upper and fore arm soft and flaccid as compared with right, and measurements at different points as compared with right are less.

"Diagnosis deferred.

"*Treatment.*—Rest, ordinary diet, hypodermic injection into upper arm of Liq. strychniæ, gr. $\frac{1}{80}$. Temperature regularly subnormal in the morning, rising to 100° or 101° in evening.

"*March 10th.*—Got up in afternoon; feels improvement in leg; arm much the same.

"*March 11th.*—Up all day."

Dr Wyllie's Report continued.

"Present Condition.

"1. *General.*—As regards *conformation* and development patient is slightly built and small for her age. *Deformity:* Pelvis is tilted up to the left side, this being much higher than the right. General muscularity poor. Patient is confined to bed. Aspect is pleasant and facial expression cheerful. Temperature of body: morning, 98°·4; evening, 98°·8.

"2. *Skin, etc.*—Patient does not perspire much; no skin eruption or jaundice; skin is rather pallid, but there is a bright flush over the malar bones; no marked pallor of lips or other mucous membranes. When admitted there was some œdema of both ankles, but this has to a great extent disappeared. On the right side of the body the skin is red and somewhat inflamed, from the fact that she constantly lies on her right side. She is seemingly unable to lie on her back with any degree of comfort. There are no signs of syphilis present.

"*Joints.*—Round the left shoulder joint the muscles show remarkable wasting; the supra- and infra-spinatus being markedly atrophied, and the deltoid has almost disappeared. The bony points are extremely prominent. The coracoid process can be easily felt on account of the muscular atrophy. The head of the humerus can be lifted out of the glenoid cavity without muscular resistance. In front of the shoulder joint above the pectoralis major is a small fluctuating diffuse swelling; over the biceps there is also a small circumscribed swelling, in which also fluctuation can be detected. This latter does not communicate with the shoulder joint, as is the case with the former.

"*Passive Movements of Shoulder Joint.*—On bringing the elbow over the chest and rotating the head of the humerus in the glenoid cavity a remarkable grating can be felt, as if the articular cartilages were wholly destroyed. The joint is far more mobile than is normal, because of the absence of muscles round it.

"*Voluntary Movements.*—Patient has remarkably little power of movement at the joint. Abduction is totally gone, but there is slight power of adduction when the arm is raised from the side. Movements backwards and forwards are performed by pushing with the fingers on the bed in a crawling manner. In the *forearm* the muscles are fairly well developed; so also are those of the hand.

"*Left Hip Joint.*—As already mentioned, the pelvis is tilted upwards to the left side. The leg is slightly flexed both at the hip and knee, so that the left foot is about 3 inches further up than the right, any change from this position causing intense pain. If the attempt to straighten the knee is made, the back at once becomes greatly arched. There is great tenderness over the whole region of the left hip, and the slightest movement causes the patient to scream. There is some wasting of the glutei and quadriceps extensor, but the muscular atrophy is not so marked as that about the shoulder.

"*Passive movement of left hip* cannot be made, any attempt only resulting in arching of the spine, and causing the patient to cry out from pain.

" *Voluntary movements* are also impossible. There is no dislocation at the hip joint, but there is some flattening over the trochanter.

" 3. *Circulatory System.*—No cardiac dyspnœa or palpitation; pulse-rate, 88–100; pulse is regular, forcible, and full; no rigidity or tortuosity of the vessel walls; radical pulses are equal and synchronous. Heart presents no abnormality. Cardiac sounds are faint, but there is no murmur. No coldness of hands or feet, but there is some slight œdema of both ankles. No marked anæmia.

" 4. *Respiratory System* presents nothing abnormal. No sign of any tubercular deposit in the lungs.

" 5. *Digestive System.*—Appetite good. Complains a good deal of thirst. The bowels are kept regular by cathartics. Teeth are good, tongue being clean. Nothing abnormal about the abdomen.

" 6. *Nervous System.*—(1.) No motor symptoms except inability to move the affected limbs, and atrophy of the muscles. (2.) Trophic Functions: Redness of skin on right side from constantly lying on that side. (3.) Sensory Functions: Hyperæsthesia over region of left hip, probably of a nervous character.

" 7. *Urinary System.*—Urine examined April 26th, 1891. Colour, straw; sp. gr. 1017; no deposit; cloud; acid; no albumen, etc.

" TREATMENT AND PROGRESS.

" *April 26th.*—Patient's temperature came down to normal this morning. She still has great pain, especially if any pressure, however slight, be made on the left hip. She lies on her right side, and occasionally on her back. Movement hurts her extremely.

" *April 29th.*—Patient's temperature has been rising at night. She is feeling slightly better, but cannot be touched yet without pain. The left arm was moved passively to-day by Dr Bramwell, who felt no grating or any great resistance, except from the patient's muscles.

" *April* 30.—Patient is practically *in statu quo.* Very slight pressure over the left hip or thigh wakens her if asleep. While she was taking a drink, and was not observing, pretty firm pressure was made without remonstrance. The swelling of her feet is almost gone, but is still present in slight degree in the left foot. Patient's right side has been getting sore from constantly lying on it, and she was therefore put on a water-bed yesterday.

" *May* 2.—Patient says she feels better, but she is still as helpless as regards her power of movement. She was to-day examined by Dr Wyllie, who found great grating in the shoulder joint, as if there were total destruction of the cartilage.

" *May* 4.—Mr Miller examined patient to-day and found great grating in the left shoulder joint, as had already been demonstrated by Dr Wyllie. The hip joint cannot be moved, and arching of the spine occurs if the knee be pressed down.

" *May* 6.—Patient was yesterday re-examined by Mr Miller, who noticed the swelling in the region of the biceps muscle,—in this swelling he got fluctuation, and on putting a hypodermic needle in some pus was withdrawn. The other swelling beside the pectoral, he thinks, communicates with the shoulder joint.

"*Diagnosis.*—Tubercular arthritis of shoulder (chronic), and of hip (acute). Excision of hip advised.

"*May* 12.—To-day removed to Mr Miller's ward.

"Temperature shows variations from normal in the morning to about 100° at first, and then to 102° and 103° in the evening."

Extracts from Case-Book of Ward 17.

"*Condition on Admission.*—Patient is somewhat pallid, but has a bright flush on her cheeks; does not perspire much. She is thin, weak, and somewhat fretful. When admitted to Ward 33 she had œdema of both ankles, but this has to a great extent disappeared.

"*Left Shoulder.*—The muscles around the joint are much atrophied, the bony points being very prominent. In front, along the line of the long head of the biceps muscle, is a fluctuating swelling, which communicates with another similar swelling under the pectoral fascia. On rotating the humerus very distinct grating can be felt.

"*Left Hip.*—The hip and knee joints are markedly flexed, and the limb is adducted. The pelvis is tilted up on the left side, and moves with the left limb. Any attempt to move the hip joint causes the patient to scream. There is considerable muscular atrophy, but this is masked somewhat by inflammatory swelling. Patient says that the shoulder began to be weak before the hip got bad. It was also painful, but not so bad as the hip.

"*Examination of Chest.*—Breathing harsh and amphoric in a small area on left side. No crepitations. Percussion-note impaired on left side (?). Heart-sounds faint, otherwise normal.

"There is a copious muco-purulent discharge from the vagina. Temperature, 98° to 101°; pulse, 120; respirations, 23 to 30.

"It was ascertained that the child, a boy about 8 or 9 years of age, to whom the patient had been nursemaid, suffered from several tubercular affections. He had caries of the spine with a psoas abscess, which was discharging. He also had disease of the hip joint and tubercular dactylitis, for which a finger had to be amputated; and he had also a chronic cough with expectoration. This child had been attending the Infirmary for some time, and had been seen frequently by Mr Miller. He did not sleep with the nursemaid, but she washed and dressed him, and took care of him all day. He was a very fretful child, and demanded constant attention, nursing, and petting. He died in 1892. His father died in 1889 from pulmonary tuberculosis.

"*May* 13.—Mr Miller discovered that the head of the femur had become dislocated on to the dorsum ilii.

"*Treatment.*—As the parents refused to permit excision of the hip joint, extension was applied to left leg. The abscess of shoulder was opened May 19th. By June 20th the abscess was healed. Atrophy of muscles and paralysis persistent.

"*June* 23.—Mr Miller having, with great difficulty, at last obtained the consent of the parents, excised the head of the left femur. It was much diseased, and was found lying on the dorsum ilii. The acetabulum was also much diseased. This was thoroughly scraped and flushed with Barker's spoon. A drainage-tube was inserted.

"On account of copious serous discharge, the dressings had to be frequently changed during the first few days. Mr H. Alexis Thomson reported that tubercle bacilli were present in the discharge; he also proved their presence by inoculation experiment. Patient improved considerably after the operation, and was up on couch by the month of August, but wound at hip did not heal.

"In October Mr Miller removed some more carious bone from the end of the femur and the acetabulum with the flushing-spoon. A counter-opening was also made for more efficient drainage. The wound was stuffed with iodoform gauze. At this time the condition of the lung was more serious, dulness being greater.

"By November the patient's condition was the same, only she was weaker, and a bed-sore had formed. Patient was taken home by her father, 'to prevent any further operation being performed,' on 14th November 1891, almost exactly six months after her admission to Ward 17. She was dressed at home by a nurse from the Jubilee Institute. The wound in the hip never closed, and the girl died, in a hectic condition, in October 1892,—a year and nine months after the commencement of the tubercular disease. The condition of the lungs was not ascertained, but the girl had cough and expectoration constantly.

"Temperature during July normal, in August ranged from 98° to 100°; on November 14th subnormal."

Remarks.—I have first of all to thank Prof. Grainger Stewart and Dr Wyllie for kindly permitting me to publish the records of this case from their ward journals. I have also to thank Mr Alexis Thomson for kindly investigating the nature of the pus removed from the shoulder and hip joints, and so establishing the pathology of the case. The presence of tubercle bacilli was proved both by the microscope and by inoculation experiments.

I do not apologise to the profession for producing the case *in extenso*, because the history, as taken and recorded under Dr Wyllie's supervision, is interesting as well as most exhaustive; and it is on the accuracy of all the statements that I depend for my argument in proof of the case being an example of acquired tuberculosis.

Before discussing the question of how this patient became infected with tubercle, I may first point out the proofs of the joint affections being tubercular. The investigations, kindly conducted for me by Mr Alexis Thomson, demonstrated the presence of tubercle bacilli. But, besides that, there was abundant evidence in the condition of the joints themselves to convince any surgeon of their tubercular nature. The muscular atrophy of the shoulder associated with chronic (or cold) suppuration; and on the other hand, the acute and extensive destruction of the hip joint, associated with extensive caries of the head of the femur and acetabulum, were very characteristic. Further, the temperature curve was that of tubercle, not of septic or rheumatic arthritis. Lastly, the implication of the lung was corroborative, if not confirmatory.

It is a curious and interesting point in the case that the two joints, hip and shoulder, showed such a contrast in regard to the manner in which the disease manifested itself in each. The one was acute and painful, the other subacute and painless; the former having muscular rigidity and spasm, the latter muscular atrophy and paralysis to a very marked degree. The most remarkable thing about the affection of the shoulder was this atrophy and paralysis. I never saw this condition so marked—and it seemed to come on very early. When I saw the girl first the bony points (coracoid, acromion, and head of humerus) were very evident, and the head of the humerus could be drawn away from the glenoid fossa about an inch or more quite easily. The atrophy persisted, but the joint became anchylosed ultimately.

The dislocation of the head of the femur was very evident when the patient was admitted to my wards. At the operation it was ascertained that the cotyloid ligament was completely destroyed, and the head of the femur and acetabulum both extensively destroyed by caries. It is quite easy to see, therefore, how muscular spasm could have (and was almost certain sooner or later to have) produced the dislocation, there being nothing to retain the head of the femur in the acetabulum. I think, however, that the dislocation was probably produced when the patient was being conveyed from Dr Wyllie's ward to mine.

To some who read this case the idea may occur that this might have been a case of gonorrhœal or septic arthritis. I am quite sure it was not. The poor girl had a very copious vaginal discharge when she was admitted to my wards; this, however, was not gonorrhœal in character. It was whitish rather than yellow; it was unassociated with urethritis; it diminished greatly under simple cleanliness, but persisted for a long time—being, I think, most likely tubercular.

But the best proof that the arthritis in this case was not septic from the vaginal discharge is that the pus from the joints was proved to contain tubercle bacilli, and the temperature curve was not that of septic disease. I am inclined, however, to think that possibly the absorption of some septic infective material from the vagina might have had something to do with the very acute and apparently septic course of the hip joint affection.

Now I come to my argument, viz., that this was an example of *acquired* tuberculosis. I cannot prove this; but I hope to show circumstantial evidence enough to make out a case for conviction. In the first place, Why do I use the term "acquired," and not inoculated or infected? Because I do not know by what means exactly the tubercle bacilli got access to the joints of my patient.

But to proceed to my argument. My case depends on three points:—1*st*, My patient was perfectly healthy, and had apparently no proclivity to tuberculosis; 2*nd*, her disease was undoubtedly tubercular; 3*rd*, she was nursemaid to a very tubercular and "dangerous" child.

The girl was healthy up to the time she went to service as a nursemaid.

We find that her previous history, and also her family history, were good. Even when she was admitted to Professor Grainger Stewart's ward she was "round and plump, and well developed generally." She was of a "ruddy, healthy complexion and pleasant expression." Further, no suspicion of tubercular disease of any kind was entertained.

Some weeks later, when admitted to Dr Wyllie's ward, this healthy appearance was lost, and the girl had begun to look decidedly ill. One little thing is mentioned casually, viz., that her teeth were good. This is very rare in tubercular children, in my experience.

I take it, then, as proved that the girl had no proclivity to tuberculosis, and was quite healthy up to the time she went into service.

My second and third points, I take it, are also proved, viz., that my patient had tuberculosis, and that the child to whom she was nursemaid was intensely tubercular.

The question then arises, How was the tuberculosis transferred from the one to the other? How did my patient acquire the tubercular bacilli from the little boy?

Now, as I have already indicated, I cannot prove the transmission, but I can state the grounds on which I believe that this has occurred. A previously healthy girl has charge for six weeks[1] of a very tubercular and highly infectious child; she sleeps in a damp and unhealthy room; she becomes affected with a double arthritis which turns out to be tubercular, and ultimately with lung tubercle. It seems to me that the presumption is that she got the tubercle from the child whom she nursed. I presume that the sequence of events was something like the following:—

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[1] It may be argued that six weeks is not a long enough period for infection to take place. I answer that, in the first place, we do not know that there is any period of incubation for tubercle, and, in the second place, tubercle often develops in a part that was apparently perfectly healthy six weeks before some slight injury, as in the case of a joint.

The girl being a considerable part of the day with the tubercular boy, feeding him, kissing him, washing and dressing him and his sores, must have inhaled, and possibly swallowed, a considerable number of bacilli. In some way, which I presume we do not yet perfectly understand, these bacilli passed into the circulation, and were thus potentially in every part of the girl's body. From the cold and damp of the room in which she slept (the season being winter) she acquired an arthritis, probably of a rheumatic character.[1] This arthritis affords an opportunity for the establishment of a colony of tubercle bacilli which, at first slowly in the shoulder joint, and then more acutely in the hip joint, carry out their usual work of destruction. Later on they establish themselves in the lungs, and produce a fatal issue.

It is always very difficult to prove direct infection. In this case, however, I claim that at the least the presumption is very strong that the nursemaid acquired her tubercle from the child she had charge of.

I have published the case because I think that sufficient care is not always taken to prevent such unfortunate events occurring, and that because many are not aware of the risk.

VII.—A NOTE ON THE RELATIONS OF THE AXILLARY ARTERY.

By J. Ryland Whitaker, B.A., M.B. (Lond.), L.R.C.P. & L.R.C.S. (Edin.),
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In the description of the relations of the axillary artery to the cords of the brachial plexus given in our anatomical text-books, an omission occurs which, as it reappears with successive editions, it may be well to point out.

The usual description given is as follows:—"First part of the axillary artery.—The nerves of the brachial plexus are to the outer side, the external anterior thoracic nerve crosses in front, and the internal and posterior thoracic nerves pass behind. Second part.—The three cords of the brachial plexus are placed one on the outer side, the second behind, and the third to the inner side."—Quain.

"First part.—On the acromial side lie the cords of the brachial plexus. . . . Second part.—In this portion the cords lie around the vessel, one being outside, another inside, and a third behind the artery."—Ellis.

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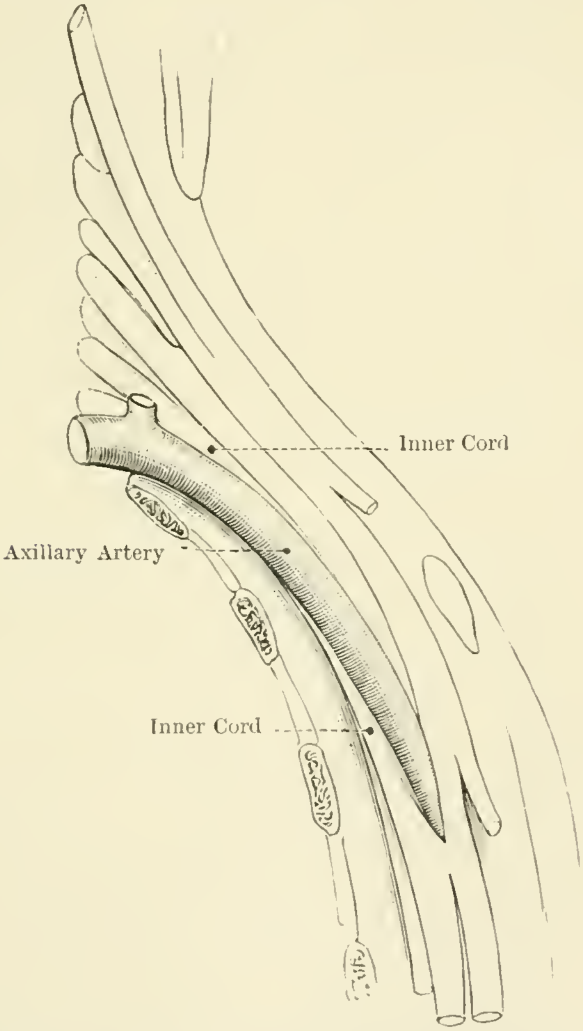
[1] I think it is probable that the girl had a predisposition to rheumatism, as shown by her having suffered from "growing pains" at various times. Her earliest symptoms were pain in the back, which were looked upon as rheumatic. Her hip was not affected to any great extent till long afterwards, for she walked to the door when leaving the house in which she was nursemaid, and she walked about in Prof. Grainger Stewart's ward. While in this ward it is expressly stated that her pain was *below the great trochanter*,—that is to say, not in the joint.

Now it will be at once seen that it is impossible for the inner cord of the brachial plexus to lie on the outer side of the first part of the axillary artery, and on the inner side of the second part without having passed either behind or in front of the vessel, and yet this must be the case if the usual description be correct. But a glance at any anatomical preparation of the axilla, or at the accompanying figure will, apart from the above reasoning, convince any one that *the inner cord of the brachial plexus passes behind the axillary artery* to gain its inner aspect; so that the relations to the cords should be stated as follows:—"The cords of the brachial plexus lie to the outer side of the first part of the axillary artery, and at the junction of the first with the second part the inner cord passes behind the vessel and gets to its inner side, so that in the second part of the course of the artery the cords of the brachial plexus lie, the outer cord to its outer side, the posterior cord behind, and the inner cord to its inner side."



Part Second.

REVIEWS.

Diseases of the Skin: An Outline of the Principles and Practice of Dermatology. By MALCOLM MORRIS, Surgeon to the Skin Department, St Mary's Hospital, London, etc. With eight Chromo-Lithographs and seventeen Woodcuts. London, Paris, and Melbourne: Cassell & Co., Limited: 1894.

THE most captious critic would find it hard to pick out faults in this most excellent compendium, which worthily sustains the reputation of the series of which it forms a part. It proves how much can be accomplished when favourable conditions are fully taken advantage of. We have here an author of tried ability engaged in a congenial task, who has freely availed himself of extensive clinical opportunities, and whose genius has been sharpened by frequent contact and discussion with minds having a similar bent to his own. In working out the design, all superfluous material has been ruthlessly thrown overboard, the evident aim being to produce an epitome of essentials, concise without dryness, accurate and thoroughly up to date. There is scarcely a question in dermatology which does not at least receive recognition, and the mode in which this finds expression, at once direct, terse, and without circumlocution, is deserving of all commendation. In rare cases this might possibly lead to misapprehension on the part of an imperfectly trained reader, as when speaking of the treatment of eczema, the distinction between the salve and the plaster muslins introduced by Unna is left to be inferred. But in general the rules for treatment are clear and simple.

Commencing with a rapid glance at the pathology of the skin, the principles of diagnosis are next sketched out, but under both headings suggestion rather than detail is attempted. The unsatisfactory state of classification has led the author to group diseases on a basis in the main etiological. "Thus the affections in the production of which disorder of the nervous system may reasonably be held to be the leading factor, form one class; the eruptions due to artificial irritation, external or internal, a second; those caused by medicinal substances, a third. A large and composite group is made up of affections which, differing in every other respect, are linked together by the fact that they are the result of the action of parasites. These may give rise to constitutional infection, as well as to local reaction, constituting a group of general inoculable diseases, or they may produce only local lesions forming a group of local inoculable diseases. Diseases in which the etiology is at present obscure, or altogether unknown—such as eczema, psoriasis, pityriasis rubra, and new growths—are, for the present, necessarily left unclassified. The progress of medical science lies almost entirely in the discovery of causes." In Hebra's original scheme, diseases ascribed to the influence of the nervous system were few; now such make up a larger list than any other single division. An interesting summary is given of the connecting links, though the exact localisation in the various parts of the nervous apparatus cannot yet in every instance be defined, while in many there must be assumed an unknown determining "something."

The eruptions associated with the administration or external use of the more common drugs are described in detail, but there is appended an extremely valuable table, which shows at a glance those arising in connexion with a number of others.

Mr Morris has made a special study of vaccination eruptions, and much information is compressed into the pages devoted to them. They are divided into two classes—1. Those subsequent to pure vaccine inoculation, which, depending for the most part on idiosyncrasy, are practically unavoidable; and 2. Those due to mixed inoculation,—that is to say, to vaccine together with an additional virus, preventable if only pure vaccine lymph is used with the strictest antiseptic precautions. As to the question whether leprosy can be communicated by vaccination, while the inherent probability is granted, it is stated that there is extremely little decisive evidence to show that this *has* actually occurred. The definition formulated of eczema appears to us a remarkably felicitous one—"a catarrhal inflammation of the skin, originating without visible external irritation, and characterized in some stage of its evolution by serous exudation." Of the special forms of eczema, the seborrhœic is shown to be nothing more than the eczematous process going through the various stages of its evolution in a skin long the seat of seborrhœa, itself a condition of over-activity of the sebaceous glands. This perversion prepares the ground for the real irritant, the efficient cause of the lesion, which is most probably of parasitic nature. Other special forms are,—sweat eczema, differing from mere intertrigo by the occurrence of "weeping" and crust formation; eczema folliculorum, a variety originally described by Mr Morris; and "nervous eczema," defined as the disease appearing in apparently normal skin, with a parasitic element as a secondary factor. Ecthyma he regards as but a modification of impetigo contagiosa. A point which has often led to error in the diagnosis of scabies is alluded to—that irritation is not infrequently felt in places distant from the seat of the disease. "Thus, having once inoculated myself experimentally on the arm, I felt little or no itching at the site of inoculation, but after a time I became aware of intense itching at the back of the shoulder."

The section devoted to syphilis is a model of condensation. In treatment the early administration of mercury is advocated. "The object to be aimed at in the first instance is to remove the poison if possible before it has infected the constitution, or if that is impracticable, to destroy it or neutralize its action." He argues with Mr Hutchinson that if the administration of mercury be begun before the disease has entered the constitutional stage, it will often happen that no secondary lesions develop; but to be successful, the mercurial medication should be continued for six or even nine months. The drawback to this is that with those who only see syphilis occasionally, a mistake in diagnosis may quite easily be committed, and the patient be unnecessarily subjected to a mercurial course.

The illustrations are of great excellence, and, in the case of the coloured ones, are arranged on the principle of contrast. Thus the frontispiece gives pictures, which will bear being magnified, of tinea tonsurans capitis, of alopecia areata, and of lupus erythematosus. On another plate we have eczema of the auricle and behind the ear as compared with lupus erythematosus, and again rosacea and the same disease are contrasted. The sole unsatisfactory plate is that devoted to lichen planus.

Of this handy, well-printed volume it may, in conclusion, be said that it is exactly what it is described as on the title-page.

Medicated Baths in the Treatment of Skin Diseases. By Leslie Phillips, M.D., Surgeon to the Birmingham and Midland Skin and Lock Hospital. London: H. K. Lewis: 1893.

Undoubtedly the use of baths as a routine method in the treatment of skin diseases has been neglected. For this several reasons may plausibly be assigned. In hospitals, in many cases the balneotechnical arrangements are far from complete, and though now baths with hot and cold water are pretty common in the better class of recently built houses, yet they are very far from being universal, while public baths will never be available for the treatment of diseased conditions. Again, there are many points in the preparation and administration of baths with which even the otherwise well-informed practitioner is unacquainted. But, granted that the skill to direct and the means to carry out the instructions are provided, the patient often grudges or cannot afford the time which such treatment, to be successful, demands. Hence it is only at some watering place, *kur ort*, or *eau thermale*, that this plan has anything like a fair chance. At the same time a handy guide to the best modes of concocting medicated baths, with hints as to the malady for which each variety is adapted, may perhaps be wanted, and this information will be found very efficiently provided in Dr Phillips' little volume.

Beri-beri: Researches concerning its Nature and Cause, and the Means of its Arrest. Made by order of the Netherlands Government by C. A. PEKELHARING and C. WINKLER. Translated by JAMES CANTLIE, M.B., F.R.C.S. With Coloured Plates from Original Drawings. Edinburgh and London: Young J. Pentland: 1893.

THE Netherlands Government deputed Professors Pekelharing and Winkler to investigate beri-beri, and this well-illustrated volume gives the result of their investigations. The disease is most widely met with in Ceylon, Assam, Burmah, the Malay Peninsula, Singapore, Borneo, Hong-Kong, and Japan, and Dr Cantlie in translating the volume undertakes it, not with a view to profit, but in the belief that it is of national importance to have the standard work on the subject available in the English tongue. The authors come to the conclusion that anatomical examination is in perfect accord with the inference drawn from clinical observation that beri-beri is a multiple neuritis. An extreme and very extensive affection of the peripheral nerves predominates, and as one approaches the central nervous system the pathological evidence of nerve change diminishes. They consider that they have established the claim that beri-beri must be ranked as a disease that must be described under the name of multiple peripheral neuritis. "The question at issue as to whether the alterations found in the anterior cornua are the cause, accompaniment, or result of the changes in the peripheral nerves, whilst the anterior roots are intact, is a matter of indifference to the end we have in view, and it is of no importance as regards the principal question. We have only to remark here, that the progress of degeneration in the peripheral part of the cut nerve gives us no reason to suppose that if a nerve cell be diseased its extension towards the peripheral nerve dies from the periphery towards the centre; therefore, as long as no absolute proofs are brought forward to support such a form of nerve degeneration, we cannot see why the multiple neuritis established with so much trouble ought to be classed amongst the diseases of the spinal cord as an anterior poliomyelitis."

The authors have done a splendid piece of work and are to be congratulated on it, and the publisher has produced the volume in an excellent manner.

The Smallpox Outbreak at Montrose in 1893. Report by Dr LAWRENCE, Medical Officer of Health.

THIS most admirable report deserved an early notice, but has been unavoidably postponed. It describes an excellent piece of work, and has some valuable lessons. Eighteen cases occurred in three groups. Eight were treated at home by their own medical attendants, and ten received hospital treatment. Promptitude was shown to such purpose that in two days a couple of neat wards, with nurses' room and kitchen, were improvised in a building called the Old Baths Building. The lessons are clear. No case of smallpox occurred in a *re-vaccinated* person. Of the eighteen cases, seventeen, all vaccinated in infancy, recovered. Fifteen were very mild. The only case that died had *never* been vaccinated. It was a fearfully bad confluent case. All preparations for interment were made previous to death; this occurred at midnight, and the funeral was over by early dawn. All the cases were traced as either directly or indirectly to working among flax. A similar epidemic, seven years before, apparently had the same signs. Moral—Everyone, specially flax workers, should be revaccinated.

Suicide and Insanity. By S. A. K. STRACHAN, M.D., Barrister-at-Law, etc. London: Swan Sonnenschein: 1893.

IN this book Dr Strachan seeks to show that suicide is a sign of degeneration of the race, much commoner with civilized peoples than with savages, who, he thinks, lead a more natural life. He gives some striking instances of the transmission of the suicidal proclivity by heredity. Dr Strachan argues that there are cases in which life is so beset with evils that a man may justifiably seek to escape from it. He thinks that the still existing statutes of English law condemning self-destruction should be swept away, but proposes that would-be suicides should be confined in lunatic asylums, even if the attempted suicide were the only sign of insanity. Dr Strachan does not say how long they should be detained. This is not very logical, especially as the author himself shows that the ordinary punishment at court of law is often trifling, sometimes merely nominal, whereas it is no light thing to be imprisoned in an asylum. In treating this subject, Dr Strachan shows a good knowledge both of law and medicine. No doubt some people will blame his book as tending to increase the already increasing frequency of suicide, but hope and the love of life will always be strong enough in the human breast to make self-destruction a comparatively rare action.

Text-Book of Nervous Diseases, for the use of Students and Practitioners of Medicine. By CHARLES L. DANA, A.M., M.D., etc. Second Edition. New York: William Wood & Co.: 1893.

IN the preface to the second edition, Dr Dana, after expressing gratitude for the kind reception of his work, adds,—"The unfavourable criticisms which have been made have not been numerous, and, I confess, not unjust." Though this arouses a suspicion that more judgment may be shown in an unfavourable than in a favourable review, we cannot find that a study of the work in question confirms such a notion. As a text-book it seems to us complete; sufficient attention is given to every point, and everywhere one sees marks of care, judgment, and acquaintance with the subject. The numerous well-planned engravings throughout the text add much to the clearness of the book.

Dr Dana commences with a chapter on the Anatomy of the Nervous System, and gives, in other parts of the book, explanations of the philosophy of the brain and nerves. Insanity is only dealt with incidentally. Considerable space is devoted to treatment. The list of remedies is pretty full, comprising many new drugs which have never got into common use. Some of these are simply mentioned; others are recommended warmly or feebly; others are condemned.

Dr Dana tells us that antifebrin and sulphonal are drugs which sometimes control the convulsions of epilepsy. We were once induced to try antifebrin in a case of chronic epilepsy by a favourable report in Dr Hare's book on Epilepsy. The first dose produced vomiting and depressing effects; we reduced the dose, and went on with the drug for three days, when we were startled by a rapid succession of severe fits, which we strongly suspect were excited by the remedy.

Féré, in his book, *Les Épilepsies*, mentions antifebrin as a useless remedy. What is singular in a report recently published in the *British Medical Journal* of a "Therapeutic Committee" appointed to inquire into the importance of the ill effects following the use of antipyrine and antifebrin, there is no mention of the employment of this drug against epilepsy.

The Blot upon the Brain: Studies in History and Psychology. By WILLIAM W. IRELAND, M.D. Edin., formerly of H.M. Indian Army, etc. Second Edition. Edinburgh: Bell & Bradfute: 1893.

WE welcome with much pleasure the second edition of this most interesting and original work; and though it was fully reviewed in our pages eight years ago (Nov. 1885), we cannot resist the pleasure of again recommending it to our younger readers, or to any who may not possess the first edition. This one has been brought up to date with very little change either in its size or arrangement. The quaint name is a bit of a line from Tennyson,—"'Tis the blot upon the brain that will show itself without." The motive of the book is to explain many important events and puzzling characters in history by detailing and defining the diseased function of the brains of the principal actors. Mohammed and Luther, Joan of Arc, the Cæsars, an Indian Sultan, a Russian Tsar, a Spanish dynasty, saints and sinners, ordinary cranks, and extraordinary maniacs, pass before the reader in picturesque procession.

Dr Ireland's wide general culture, his profound knowledge of Eastern history and customs, and his special studies in insanity, both in theory and in clinical observation, specially fit him to make a work like this profitable to the specialist in insanity and deeply interesting to the cultured general reader. Any one who takes up this work will not willingly lay it down, and will ask for other works by the same author. He has written on Idiocy and Imbecility; also another series of similar studies in psychology and history, quaintly entitled *Through the Ivory Gate;* also a stirring historical novel, called *Golden Bullets.*

In all his works we find original thought quaintly expressed, much erudition concealed and digested, much human nature, and the sympathy which we find in the splendid adage, "Tout comprendre est tout pardonner," and under it all a thread of that uncomfortable theory which we fear is held by nearly every alienist physician, that we are all, whether safely inside or fortuitously outside the walls of an asylum, more or less daft.

On Common Neuroses; or the Neurotic Element in Disease, and its Rational Treatment. By JAMES FREDERIC GOODHART, M.D. Aberd., F.R.C.P., Physician to Guy's Hospital. Second Edition. London: H. K. Lewis: 1894.

WE welcome a second edition of this thoughtful little book most cordially. It is very nearly a mere reprint of the first edition, and we think the author has been well advised in not expanding it further. Some of the cynical remarks in the book are worth remembering; as, for instance, when the author, speaking of liver disease, satirizes those who "are sensitive to the breath of the trade winds," and pour the last puffed medicine down their patients' throats. It is doubtful, however, if Dr Goodhart does not lay too much at the door of the nervous system, a system which can only answer for itself vaguely and indistinctly. That his book is very readable and most suggestive we do not deny.

Outlines of Gynæcological Diagnosis. By N. T. BREWIS, M.B., C.M., F.R.C.P.E. Edinburgh: William F. Clay: 1894.

DR BREWIS is well known as a successful teacher of gynæcology and as a skilled operator, and his little book contains the outlines of the course of instruction in practical gynæcology which he has given to his students during the last seven years. The information in the work is put in a clear and succinct manner; no superfluous matter is to be found in its pages, and yet there is nothing omitted that is of any importance from the practical standpoint; and the advice is in all points sound and likely to be of great assistance to those intending to practise gynæcology either as a branch of general medical work or as a speciality. We may specially cite the following rules concerning the physical examination, which are too often forgotten by even the practised gynæcologist:—"Respect the sensibility of your patient. Remember that in submitting to an examination the patient in many cases has to exercise a great amount of courage. Avoid inflicting physical pain. Your touch must be gentle and light. Perfect development of the sense of touch is what the gynæcologist requires most. A perfect touch is a light one, and is the only one by which information can be obtained." The work is well printed, and is illustrated by some drawings of instruments, and by some woodcuts from Schultze's writings. It is sure to be widely read, not only by Dr Brewis' students, but also by many others who are studying the art of gynæcology; it ought, however, to have been provided with an index.

An Introduction to Midwifery: A Handbook for Medical Students and Midwives. By ARCHIBALD DONALD, M.A., M.D., C.M. (Edin.), M.R.C.P. (Lond.), Surgeon to St Mary's Hospital for Women and Children, Manchester. London: Griffin & Co., Lim: 1894.

DR DONALD has succeeded in condensing a very large amount of information into the 188 pages which go to make up his work on Midwifery for Midwives and Medical Students. His book does not otherwise differ much from those previously published on the same lines. It shows signs of careful proof revision, and is illustrated by 72 woodcuts, a few of which are taken from original drawings. The statements in the work are correct, and for the most part well up to date. The author, however, in describing some of the injuries which may happen to the new-born infant, seems to regard "obstetrical paralysis" as due only to injuries of individual nerves such as the facial; but that term is usually employed rather to denote the more permanent lesions caused by intra-cranial hæmorrhages which have been so well described by Osler and others.

Modern Gynecology: a Treatise on Diseases of Women, comprising the results of the latest Investigations and Treatment in this branch of Medical Science. By CHARLES H. BUSHONG, M.D., Assistant Gynecologist to the Demilt Dispensary, New York. London: Henry Kimpton: 1894.

IN his preface Dr Bushong says, "A glance at the size and pretensions of these works (on the Diseases of Women) will show that they are all written from one standpoint, that of the specialist. But what of the family physician, of the general practitioner?

What is being done for him ?" The author has, therefore, set himself the task of writing a work on the essentials of gynæcology for the general practitioners who graduated twenty or fifteen years ago. Nevertheless, the book in the main follows the lines of many of the smaller works on diseases of women, which already exist at any rate in Great Britain, and which Dr Bushong seems to have overlooked. Whilst the idea of the treatise is not novel, the book itself is well written, the text is elucidated by many helpful illustrations, and the advice on most points is sound and valuable. The author evidently does not think highly of electricity as a means of treatment of fibroids. We doubt whether he acts wisely in recommending pessaries for the correction of the anteverted uterus; but this is, of course, a question on which there is divergence of opinion. It is difficult to understand why the book should be printed in the United States and published in London, unless there is also an American edition.

Teratologia: Quarterly Contributions to Antenatal Pathology. With Reviews of the Current Literature of the Subject. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E. Edinburgh: Williams & Norgate: April 1894.

The cry is, still they come—yet another medical periodical. It is true it is only a quarterly one, and, moreover, is devoted to a subject which is as yet unrecognised in periodical literature. We wish Dr Ballantyne's new departure every success, because there was certainly room for a journal dealing exclusively with teratology, where cases and dissections connected with this obscure branch of science may be gathered together. Hitherto they have been scattered here and there, the very waifs and strays of professional literature. Such an organ was certainly needed. At present the subject has hardly escaped from the region of chaos; but with earnest workers like Dr Ballantyne, and a journal devoted to its study, we may hope in time to have some clear light thrown into its dark corners, and to discover some scientific bond uniting its as yet disorderly elements.

This first number is a promising one. It begins at the beginning, and gives an exhaustive account of the *Fœtus Amorphus*, with illustrations of a case observed by the author, and references to the observations of others. It contains also an interesting notice of the first published work on fœtal diseases, "De Morbis fœtuum in Utero Materno," by Philippus Jacobus Düttel, published in 1711. Some reviews and abstracts from current literature close the number.

Transactions of the American Gynecological Society. Vol. XVIII. Philadelphia: 1893.

The annual volume of the American Gynecological Society's Transactions, containing the proceedings at its yearly meeting in

May 1893, is full of interesting papers by such well-known gynæcologists as Parvin, Winckel, Mundé, Mann, Lusk, Coe, Cooke Hirst, and Whitridge Williams. There are several useful contributions on the subject of the treatment of uterine fibroids, a scholarly research concerning calcified tumours of the ovary (by Whitridge Williams), an interesting and suggestive paper on the difficult question of dress-reform (by R. L. Dickinson), and a communication by Mundé on the abdomino-pelvic fistulæ which may follow cœliotomy and laparotomy, embodying the results of great experience in abdominal surgery. The volume is beautifully printed, and there are many good illustrations made from photographs.

The Johns Hopkins Hospital Reports. Vol. III., Nos. 7, 8, 9. Report in Gynecology, II. Baltimore: The Johns Hopkins Press: 1894.

THIS, the second volume of the Reports of the Johns Hopkins Hospital which treat of gynæcological matters, affords some very interesting and instructive reading to the specialist. The papers, which are nearly twenty in number, and occupy over 400 pages, are chiefly from the pen of Dr Howard A. Kelly; but there are also some by Drs W. W. Russell, Mary Sherwood, and A. L. Staveley. All the communications are worthy of close study; but those on "Ovariotomy in the Aged," and "Anæsthesia in Intrapelvic Gynecology," and the pathological reports on deaths following operation, and on those without operation, are of special value. There are several good reproductions from photographs, and the volume as a whole fully reaches the high level of excellence already attained by the Johns Hopkins Hospital Reports.

The Retrospect of Medicine; a Half-yearly Volume. Edited by JAMES BRAITHWAITE, M.D. Lond. Volume CVIII., July to Dec. 1893. London: Simpkin, Marshall, Hamilton, Kent, & Co., Limited. Edinburgh: Oliver & Boyd: 1894.

WE have received the latest volume of this *Retrospect*, and as usual have found it full of abstracts of interesting papers published during the latter half of 1893. Though more modest in scope, it still compares favourably with the recent and more ambitious annuals and year-books.

The Wife's Guide to Health and Happiness. By GORDON STABLES, M.D., C.M. London: Jarrold & Sons: 1894.

THIS book is a strange medley of medical advice, short stories with a hygienic moral, homiletics, and mild witticisms. Its range will be understood when it is noted that whilst one chapter deals with "The Whites and other Troubles," another is entitled "About Love and Marriage," and a third is taken up with "Alcohol." The whole is garnished here and there with short verses of poetry. Notwithstanding all this, the book really contains many useful maxims and good advice, and will doubtless be widely read by those who have enjoyed Dr Gordon Stables' other works. We cannot refrain from quoting the following advice (which, by the way, might be necessary for the husband's as well as the "wife's happiness"),—"You pay a shilling for a bowl of soup, with bread, at a railway station; but if you find force-meat balls in the bowl, it would be better to pay some one else two shillings to eat the mess for you. . . . Hard-boiled eggs are good for canaries; the refreshment-room pork-pie and sausage-roll an emu might eat with relish; wise travellers avoid them, and give even sandwiches plenty of sea-room."

The Nurse's Dictionary of Medical Terms and Nursing Treatment. Compiled for the use of Nurses. By HONNOR MORTEN. Second Edition, considerably Enlarged. London: The Scientific Press, Limited.

THIS is a useful little book, and will help a nurse who is in difficulty as to medical terms. Under certain heads short directions for treatment are given which are fairly sensible. Most of the definitions are intelligible and correct. Paget's disease, however, (p. 97) is not associated with the name of Padget, M.P., but with that of Sir James Paget. Villi are not always "fine soft hairs" (p. 137). Neurectomy is more than "severing a nerve" (p. 90). Irit*e*s is not the usual way of spelling irit*i*s. Why gemellus should be put in as the name of two muscles, while hardly any other muscle is mentioned, is rather inexplicable.

Chirurgie des Voies Urinaires—Étude Clinique. By Dr E. LOUMEAU. Second Edition. Bordeaux: Feret et Fils: 1894.

THE author has presented in this volume a number of clinical notes and records which have already been published in the journals.

The subjects dealt with are arranged in twenty-three chapters, upon no particular system; stricture, cystitis, prostatic troubles, stone, gonorrhœa, etc., are considered, but little or no special interest attaches either to the cases or to the remarks deduced from them.

Hernia: Its Palliative and Radical Treatment. By THOMAS H. MANLEY, A.M., M.D. London: F. J. Rebman.

ONE rises from a perusal of this book with a feeling that, though much seems to be contained in its pages, no fresh interest has been lent to the subject.

The aim of the writer has been "to endeavour to give to each therapeutic resource its due merit, and strive to indicate the precise limitations of each," but save for the conviction that he would unduly restrict the field of operative treatment for the radical cure of hernia, no distinct impression as to his personal experience of, and attitude towards, the subject remains in the mind.

His aim is largely defeated by a want of system in the construction of the book, and by needlessly detailed references to obsolete or discredited modes of treatment.

The clinical cases, 58 in number, which are placed in tabular form at the end of the volume, would have been of much greater value had they been placed in the text in connexion with any special section which they might happen to illustrate.

While much useful information is doubtless to be found in the work, and the author's researches into the history and literature of the whole matter have been very complete, yet the book does not supply any felt deficiency in the literature of hernia, and appears rather a superfluous product of the "bookmaking" age to which Dr Manley alludes in his first chapter.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING VI.

Wednesday, 21*st February* 1894.—Dr Clouston, *President, in the Chair.*

Discussion on Intra-Cranial Surgery,—*Continued.*

I. Exhibition of Patients.

1. *Prof. Annandale* showed a patient from whom a tumour of the brain had been removed three years before.

2. *Mr Cathcart* showed—(*a.*) A patient who had been operated on for brain abscess, after having been trephined for mastoid disease. (*b.*) A patient in whom the mastoid had been trephined without benefit; trephining was subsequently performed over the temporo-sphenoidal lobe, and pus evacuated.

3. *Dr M'Bride* showed a patient in whom Stapii's operation had been performed.

4. *Dr M'Kenzie Johnston* showed a patient in whom drainage of the mastoid antrum was kept up by means of a lead canula.

5. *Dr MacGillivray* showed a girl who had been TREPHINED and the LATERAL VENTRICLES ASPIRATED with beneficial results.

6. *Mr Alex. Miles* showed for *Mr A. G. Miller* a patient who had been operated on for JACKSONIAN EPILEPSY, a cure resulting (published *Lancet*, 21st November 1891). A. S., æt. 42, wiremaker, received injury to head November 1884. The scalp wound healed, the cicatrix remaining tender. He had had his first fit 26th June 1888, while in bed, three and a half years after injury. A second fit next day,—partial aphasia, convulsions affecting right side of face, right arm and leg, and then whole body. He was admitted to the Royal Infirmary, under Dr Wyllie's care, in July 1888, and transferred to Mr Miller's ward 10th July 1888, having had 27 fits in the previous twenty-four hours. He was operated on 4.30 the same day. Three circles of bone were removed over Ferrier's areas 12 and 6, and the dura opened, but nothing abnormal found. After the operation the fits increased. On 11th July he had 46 fits, and was completely aphasic, though conscious. After 21st, fits were less severe, affecting face only. On 23rd July he had as many as 219 fits in twenty-four hours. On 4th August fits began to diminish in frequency. Last fit occurred on 14th August. While in hospital he took bromide of potash without any appreciable effect on fits. Discharged well 22nd October 1888. Since then he had had only one fit, on hearing of the sudden death of a child. The fit was slight, and he recovered in a few minutes. Since leaving hospital six years ago he had only this one fit, and could do a full day's work. A marked depression was perceptible where the circles of bone had been removed. The depressed area was quite firm, and not tender to the touch.

7. *Dr Stewart* showed—(*a*), A patient TREPHINED FOR MIDDLE MENINGEAL HÆMORRHAGE; (*b*), a patient TREPHINED FOR INJURY,—a cure resulting in both cases.

8. *Dr MacPherson*, Larbert, showed a GENERAL PARALYTIC who had been TREPHINED, and the disease arrested.

9. *Dr George A. Gibson* showed, for *Dr Felkin*, a patient who had been TREPHINED FOR SUBDURAL CYST. J. I., residing in Edinburgh, aged 23, came under observation in January 1888. The patient's right arm and leg were badly developed, and to a large extent paralyzed. She had a lateral curvature of the spine, diverging to the left in the lumbar region, and to the right in the dorsal region. With the right hand she could just pick up a pencil with her fingers; she had hardly any power of grasp; she could only bring her hand with difficulty to within two inches of her mouth; she could not move her hand at the wrist joint, nor could she support her forearm. She had no sensation in the right arm; the radial pulse was smaller than, though synchronous with, the left, and the arm was three inches shorter than the left. The right leg was an inch and a quarter shorter than the left. She could not walk a mile, and had great difficulty in hobbling about.

The right extremities were both cold and clammy to the touch, and uniformly one and a half to two and a half degrees lower in temperature than those on the opposite side. When ten months old the patient received a blow on the head from a brick falling from the roof of one of the houses in the High Street, and on examination in 1888 a trench-like depression in the bone of the skull could be felt on the left side crossing the fissure of Rolando one inch above its external extremity. Full details of the case were published in the *Medical Chronicle*, October 1889. Mr Hare operated on the 18th of January 1888, and found a large extra-dural cyst extending to a depth of two inches from the surface of the skull, and an osteophytic growth was felt growing inwards from the inner table of the skull, extending inwards half an inch towards the surface of the brain. This was removed, and also as much as possible of the outer wall of the cystic cavity. Nine portions of bone were planted on the outer surface of the dura, and the wound closed, a catgut drain being introduced at the posterior end of the wound. Healing was complete on the twelfth day. The patient was shown at a meeting of this Society on the 15th of February 1888. The progress of the case has been good. The patient can now walk easily six or eight miles without discomfort. She is a member of a church choir, she is bright and cheerful, works a sewing machine, and is fit for hard household employment. The leg has grown an inch and a quarter since the operation; the arm two and three-quarter inches. The spinal curvature is less, the temperature on both sides of the body normal, and sensation has returned to both arm and leg. The patient can grasp 25½ degrees of the dynamometer scale, and she can write with her right hand, although not very well. The movements of the right hand are still limited, but she has considerably more power in it when unnoticed that when she is conscious of observation.

10. *Mr Caird* showed two cases TREPHINED FOR INJURY.
11. *Dr James* showed a patient operated on for EPILEPSY.

II. DISCUSSION—*Continued.*

Mr John Duncan said that operations in intra-cranial surgery might be practically divided into the aseptic and the septic. Taking the aseptic cases, there was an immense number of subjects on which they still desired knowledge. One of these was the localization of function in the brain. On this point he could confirm the observations already made in the course of the discussion as to the apparent uselessness of the frontal lobes. A boy was kicked on the forehead by a horse, and about a dessertspoonful of brain tissue came through the wound and lodged on his cheek. There was a hernia cerebri for six months, but it ultimately closed. The boy died of phthisis three years later. During all that time, as far as his mental condition was concerned, he was, according to his friends, absolutely well. Another point upon which they wanted information was the nature of nerve action, and of its excitants and depressants. Experiments had to a certain extent shown the relationship of various electrical currents to nerve action, but their pathological knowledge was still exceedingly imperfect. Speaking generally, one might put it that an excess of pressure diminished nerve action, and that hyperæmic and irritative conditions increased it. In this relation he would like to draw the attention of some of those who had already spoken to the fact that epilepsy was by no means to be looked upon as a pressure disease. It was a disease of irritation. It might be connected with surgical injuries, but not in the way of pressure directly. The pressure merely set up a hyperæmic and diseased condition of the brain tissue, which was likely to produce epilepsy. In this connexion he might refer to the case of a little child who was brought into his ward suffering to an extreme degree from epileptic fits due to compound fracture three years before. He trephined, and found that there was a big hole very nearly in the centre of the forehead, through which the dura mater was tightly adherent to the pericranium. Absolutely nothing else was found. The dura was opened, and the arachnoid was seen. There was nothing wrong with it. As a result of the operation there was a very great diminution of the fits, and for many months an entire abolition of them. After the child went home, however, they returned, but again diminished on the patient's re-admission to hospital. There were so many factors bearing upon these epileptic cases that the investigation of the subject was attended with great difficulty. The centre of irritation was often not in the brain at all. He had operated in a case of epilepsy in which the removal of a stone from the bladder was followed by an extraordinary diminution in the number of fits; and they probably all knew of cases in which the removal of a long prepuce had cured convulsions. Great benefit was no doubt to be derived from the removal of any well-defined source of irritation in epilepsy, but he did not regard the mere trephining of the skull with a vague idea of relieving pressure as an operation likely to be followed by success. Another point upon which he would like to have further information was the physics of the brain. They knew very little of the conditions under which the normal tension of the cerebro-spinal fluid was produced and maintained. They might now, he supposed, hold it an exploded theory that the encephalic contents were to be looked upon in the light of an incompressible fluid in a rigid case. The conditions were rather to be looked upon as analogous to those of the testicle within its tunic, or the contents of the thorax and abdomen in their walls, the difference being rather in the delicacy of the structure and mechanism than anything else. Possibly they might regard the nervous tissue of the brain in the light of an incompressible fluid—a sort of œdematous jelly; but it was to be remembered that it was permeated very thickly with other structure, such as bloodvessels, which must alter very remarkably the effects of pressure. It was important to understand that they might have in the brain two kinds of compression, a general and a local. In illustration of this point he mentioned two cases. A woman was brought to the Infirmary in a state of coma following an injury to the head. There was a small cut in the temporal region. Thinking that this would be the seat of pressure, he trephined over it. Nothing was found except a little contusion of the membranes. The patient died, and an extensive extravasation of blood was found on the other side, covering the whole of the motor area and much more besides. It had produced no localizing symptoms, only coma. The other case was that of a man who had hemiplegia following a depressed fracture. Removal of the depressed bone successfully relieved the paralytic condition. In the one case there was a general compression, in the other a local pressure without any general effect whatever. There were many extremely complex conditions to be taken into account in considering compression of the brain. There must be in the brain, as in all other organs, a certain power of adjustment to pressure in order to maintain that degree of tension most suitable for functioning. There must be a slow adjustment by atrophy or hypertrophy, and also a rapid adjustment; the latter took place through three channels,—the blood, the lymphatics, and the cerebro-spinal fluid. Undoubtedly the most important factor was the cerebro-spinal fluid. In connexion with its expression the relationship to the cord and the elasticity of its membranes was of extreme importance. There was seldom any effect upon the cord by increase of pressure in the brain. The effects of sudden loss of fluid they knew exceedingly well from the occasional accidental rupture of and surgical operations upon spina bifida. There was sometimes sudden death with convulsions if the fluid was drained right away. In such cases there could also be shown exceedingly well the adjustments to pressure that are possible, for the fluid in a spina bifida of considerable size could be squeezed into the general cavity often without producing the slightest effect. He had removed the whole of the fluid from a large spina bifida in the neck, without any bad result, before injecting iodine solution. These facts showed considerable power of adjustment. It was due to the immense power of secretion and absorption in the membrane. He had had a case of fracture of the spine in which for three weeks there was a continuous drain of 6 or 8 ounces of cerebro-spinal fluid per day. The tension was no doubt sufficiently kept up by the hindrance that was artificially maintained to the exit of the fluid. The effects of pathological increase of pressure were more difficult to understand; it was so constantly associated with inflammatory conditions. It was of great importance to consider what kept up the pressure in such cases. Was the increase of fluid due to an evanescent cause or to a persistent cause? Or was it possibly due to a cause which was kept up by the increased tension? They knew that to drain a hydrocele for two or three days would cure it; and along with Dr Affleck he had with success in six consecutive cases put a glass tube for only a few days in the tubercular abdomen of children. The tension in these cases might produce a hyperæmia which would subside when the pressure was relieved. It was justifiable, it seemed to him, to operate in cases of excessive intra-cranial pressure, even in tubercular meningitis, in general paralysis possibly, and in hydrocephalus if other conditions did not interfere. It was quite clear that they must drain for a certain time. In hydrocephalus the large size of the osseous case made it exceedingly doubtful if they could benefit the disease much by operation. In other cases there were various conditions that made it exceedingly difficult to keep up the drainage in an efficient way. He had found that it was exceedingly difficult to maintain the issue of cerebro-spinal fluid from the surface of the cerebrum for more than twenty-four hours. Exudation of lymph took place which cut off the flow. Various suggestions had been made to overcome this difficulty, but none of them were very satisfactory. These were the desultory observations that had occurred to him. There were two classes of cases, the irritative and the compressive. In the irritative, of which epilepsy was the type, they must remove the focus of irritation. In the compressive they must remove the cause of pressure, and if possible the operation must be over the seat of the disease.

Dr Byrom Bramwell's remarks will appear in a future number of this Journal.

Dr Batty Tuke said what, perhaps, had impressed him most in this discussion was the manner in which most of the speakers accepted encephalic pressure as a postulate; using the word in the geometrical sense, as a proposition assumed without proof. Of course, he alluded to pressure produced by other causes than abscess, hæmorrhage, or rapidly growing tumours. They heard fluid "pressure" spoken of without reference to its cause, its amount, its locus, or its phenomena. They were even advised to operate for its relief on the chance that it was present; and they were advised only in one direction for the relief of an assumption, viz., trephining. Fluid pressure was not a postulate. It was the x to be determined in the equation presented in every head-case in which they were not certain of the existence of tumour, abscess, or blood-clot. It might be admitted that in every such equation many of their factors were undetermined, and that the result of their labours could in consequence only produce an empirical expression. Still, the attempt to work out such equation brought into prominence certain facts which threw a certain amount of light on the whole subject. They were all aware of the errors which arose from the acceptance of the theory that the skull and its membranes formed a practically closed sac. Were it so, no change in the volume of blood within the brain would be impossible. They knew, however, as a fact, that considerable changes take place in the amount of the brain blood supply under various conditions, and that pressure occurred in consequence of exudation produced at a greater rate and in larger quantities than could be removed by the lymphatics at the base and in the spinal column. In the cases in which he had recommended drainage by operative measures—general paralytics—obvious indications of pressure had been present; for when the disc of bone was removed the dura bulged much further into the hole than was observed in traumatic cases where trephining was performed for the relief of local pressure, and in which inflammation, if it existed, was confined to limited areas. In two cases the protrusion filled the hole, as far as a cone could, and rose to the level of the outer surface of the skull. In all the seven cases he had seen operated on a layer of fluid was distinctly noticeable existing between the arachno-pia and the true pia, varying in different cases, but always detectable by the finger. In four early cases the pia was distinctly congested, presenting the same differences of appearance as was observed (let him say) between a normal and an inflamed conjunctiva or peritoneum. Discrimination was as easy in one case as the other. He thought he might call on Mr Duncan to confirm these observations, for he performed the operation in three of these cases. He held, therefore, that having introduced pyrexia, congested pia, effusion to the extent of producing bulging of the dura, he had introduced factors into *his* equation by which he was able to bring out the x as pressure due to inflammatory agency. He held that as regards any other organ these factors would be accepted as indicative of inflammation. To discuss the question thoroughly it would be necessary to open up the whole subject of the pathology of general paralysis. Although there was no one it was easier to agree to differ with than the President, he did not desire to come into conflict with him on the present occasion, for their views on the subject were widely divergent. All he claimed was that in four early cases presenting the appearances just related, and who were the subjects of the congeries of symptoms which characterize what we call general paralysis, the operation of trephining for the relief of pressure was not only justifiable, but was justified by results. Not only in these four cases, for operation on which he was, directly or indirectly, responsible, but in three others he had seen operated on, and in all he had read of, *immediate relief* was obtained from the intensity of symptoms. He would let Dr Macpherson speak for his cases—confining himself to his own. So long as drainage could be maintained the mental and physical symptoms markedly—very markedly—abated. Time did not permit him to enter into the details of this improvement; he must ask them to accept the general statement that improvement did take place. In the last case he saw operated on by Mr Duncan complete recovery ensued. The man presented all the well-known physical symptoms,—his memory had failed in the characteristic manner in which it fails in general paralytics, and he complained of stupidity and headache. He had no grandiose delusions. His was a very early case. Omitting certain interesting details connected with the operation which had no bearing, he thought, on the present discussion, it might be said that improvement, gradual at first, and then rapid, took place, till, after six weeks had elapsed, he felt so well that he insisted on going home. There he kept well for three months; then took to drinking, which had always been his habit, and died in a fit of delirium tremens. This was the best result he had seen obtained from the operation; for scientific purposes it was a recovery. Clay Shaw reports a somewhat similar case, the marked difference between his and Mr Duncan's being that the patient was the subject of large delusions. These and all other symptoms, except slight dulness, disappeared after operation; the man was so well that he obtained employment as a ticket-collector on the railway, but could not retain the situation on account of the dulness, which was persistent. Now, he asked, was it not of considerable importance physiologically, pathologically, and psychologically, to have shown that such marked symptoms as delusion and other mental symptoms, and paralytic symptoms might be removed by draining the membranes of the brain. He held that this was a very important preliminary fact which had been brought out by the employment of the operation. The surgeon had assisted the physician in arriving at this clinical fact—he must now assist him further. As he had said, improvement in most cases ceased a few days after the wound had healed and drainage had ceased. It was for the surgeon to devise measures by which this drainage might be maintained. Sepsis was the great difficulty in the way. He had suggested laminectomy in the lumbar region, that being the most dependent point of the cerebro-spinal drainage system. But he was told the danger of sepsis was greater there than in the skull. Prof. Annandale had told them that trephining at the base was not a difficult operation. If we could get an opening into the cisterna cerebello-medullaris, and provide for *slow and gradual* drainage, the next great step in operation for the relief of general paralysis and other head affections would be gained. *One drainage point was sufficient*, for he had observed in all the operations at which he had been present, and in which an opening was made in each parietal bone, that when the wound on one side was temporarily closed in order to proceed with a similar operation on the other, if the arachno-pia was opened on the side last operated on, on inspecting the membrane in the side first opened, it not having been previously touched, the pia was found to be drained. He had the conviction that drainage should be slow and in small quantities; for the probability was the actual mechanical pressure was not very great in amount, and that the removal of a very small quantity of fluid would relieve it. Was he wrong in saying that the best results have followed the slow drainage of other serous sacs? One word as to the cases which should be selected for operation:—1*st*, Recent cases,—cases in which complication of brain tissue consequent on inflammation have not, in all probability, gone far; 2*nd*, cases in which headache is well marked; 3*rd*, cases in which the evening temperature reaches 100° or upwards. The cases in which it was contraindicated were those of syphilitic origin, in which, from their presenting a variety of nervous symptoms other than insanity, such as local paralyses, they had reason to believe that the immediate cause was arteritis. In others, however, in which general constitutional symptoms had been present, and in which there was great headache, the procedure was, he thought, admissible.

Dr Ireland said that the same success in the treatment of general paralysis by trephining as was obtained by Dr Batty Tuke had not been recorded by other operators, as far as he had noticed. He did not think that it was likely that general paralysis would be cured in this way. With regard to microcephalus, he had happened lately to go over the recorded cases that had been operated upon, and he thought it was too much to maintain, as Prof. Annandale had done, that the treatment was attended with fair success. In twelve operations there were four deaths, and improvement was claimed in two cases. Voisin reported that Lannelongue had operated in twenty cases, but no intellectual amelioration had followed. Some of the operators did not seem to be quite aware of the pathology of microcephalus. In many cases there was really no closure of the sutures, as had been supposed.

Dr Clouston said that in regard to the interesting results gained by operation in general paralysis, he could only say that as it was hitherto an absolutely hopeless disease, he had no objections to the surgeons doing any kind of operation. But from his views of the essential nature of the disease, and looking to its pathology and the course of all recorded cases, he was most sceptical as to any possible cure from any kind of operation whatever. He did not agree that the two cases reported by Dr Clay Shaw and Dr Batty Tuke were in reality cures, even if they were cases of general paralysis at all. In the diagnosis of early general paralysis they were all apt to make mistakes. He found that in at least two per cent. of his cases a wrong diagnosis was made. Certain syphilitic and alcoholic causes were often regarded for a time as general paralysis. With regard to the improvements recorded after operation, he did not think they were any more decided than they saw in ordinary cases of general paralysis that were left to themselves. They saw such short improvements in a great many cases. At Morningside he found he was in the habit of discharging, as recovered, many cases of general paralysis. The symptoms so disappeared that the patients were regarded as not insane. But they invariably came back in a short time. He was absolutely sceptical as to the existence of excessive pressure at all in general paralysis, except, perhaps, the kind of pressure that hyperæmia produced. As regards the contested question as to whether the fluid under the arachnoid meant pressure or not, he held that it meant want of pressure, and was merely compensatory after the brain had undergone atrophy. Others said it meant excess of pressure. With regard to general insanity, there was one class of case which he was quite certain could be cured if they could make the diagnosis. He had seen a number of cases in which spiculæ of bone were found post-mortem attached to the falx or the arachnoid, or to the inner side of the dura. Such spiculæ occurred in cases of great intensity,—cases of mental epilepsy. Few of them had convulsions. He had no doubt that the irritation of those spiculæ of bone had caused the irritation of the mental centres, and at last had caused the death of the patients. If they could diagnose these morbid growths of bone, and remove them, they would probably cure the insanity. He thought that in certain otherwise incurable cases of mental disease, trephining might be the best means of counter-irritation that could be applied. In curable cases, however, they were not justified in appealing to the surgeons until they could warrant that the operation would be perfectly free from danger to the patient's life. He had recently had an interesting case at Morningside, in which Mr Wallace had trephined. The patient was a man of middle age. There was a history of a fall, and he had had syphilis. Many of his symptoms were those of general paralysis, but his speech was not characteristic. He had attacks of convulsions, which always began in the forefinger of the right hand. The operation, unfortunately, was followed by no improvement. Indeed, the patient became more maniacal. Intercurrent hæmorrhage occurred, and he died within a week. In order to make the diagnosis certain in such cases when operated upon, he recommended that a small piece of the cortex should be removed and microscopically examined. This had been done in this instance, and the diagnosis of general paralysis was confirmed before the surgeon had completed the operation.

Mr Cathcart moved the adjournment of the discussion, which was agreed to.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION LV.—MEETING V.

Wednesday, 14*th March* 1894.—Dr A. H. FREELAND BARBOUR, *President*, *in the Chair*.

I. The following gentlemen were elected Ordinary Fellows of the Society:—J. L. Thomson, M.B., C.M., Australasian Club; George S. S. Hirst, M.B., S. Hylton, Sunderland; John Stevens, M.D., 3 Shandon Crescent, N. Merchiston; C. I. Bodon, M.D. (Buda-Pesth), 19 Rutland Square.

II. *Dr J. W. Ballantyne* exhibited, for Dr C. B. Ker (Crieff), a FŒTUS WITH EXOMPHALOS AND A LARGE SACRAL MENINGOCELE. The feet were also clubbed, the anus was imperforate, and the sex was not evident on external examination. The history of the case was as follows:—The mother, 28 years old, 5 ft. in height, was married nine years ago, and had had three previous confinements, of which the first was instrumental, and the last took place fourteen months ago. She has had no miscarriages, and although she has never been very strong, she has had no serious illness. She is in fairly good circumstances. During the present pregnancy (her fourth) she had no shock or worry; she last menstruated on July 10th, 1893, and was delivered on February 15th, 1894 (7th month). She suffered great pain in the back during the whole pregnancy, but worse during the last seven weeks. She has also had pain in the left iliac fossa, unlike anything she has ever had before in any of her pregnancies. At the beginning of February Dr Ker was sent for, as she had some red discharge; there was no opening up of cervix, and she was ordered to rest. A fortnight later (Feb. 15th), labour pains began at 8 A.M., and at 1 P.M. the os was the size of a shilling. At 3 P.M. the os was larger, and the head was found presenting L.O.A. The patient was very faint, complaining of a "tearing pain" in the *right* iliac fossa, and had to go to bed. At 6 P.M. the os was three parts dilated, and the discharge contained much more blood than usual, but the placenta was not felt. Dr Ker ruptured the membranes soon afterwards, and the head at once came down to the perineum. There was no excess of liquor amnii. The head, although small, refused to come forward, and although the pains were strong and the perineum quite soft, remained in the same place for three-quarters of an hour, when forceps were applied, and it was easily delivered. The shoulders, however, remained, and some force had to be used in the delivery of them, a considerable placental hæmorrhage taking place, which was explained by the fact that placenta and infant came away together. The fœtus gave two or three gasps, but no cry, and the heart beat for fifteen minutes. The patient made a good recovery. Dr Ker had handed the specimen to Dr Ballantyne for examination, and he would report on it at a subsequent meeting of the Society. The father was crippled with sciatica, was 35 years old, and was alcoholic.

III. *Dr J. W. Ballantyne* exhibited,—(*a*.) The FROZEN SECTION OF THE PELVIS OF A FEMALE MONKEY (*Macacus rhesus*). The specimen had been kindly given him by Dr E. Coleman Moore in the early part of January, the animal having succumbed to the inclemency of the weather at that time. It weighed 1835 grammes, and measured in length from head to end of tail 50 cms., and from head to perineum 36 cms. (about 14¼ inches). It was evidently a young female, with the general characters of the *Macacus rhesus*.

It was frozen, and a mesial sagittal section made of the trunk, in order to afford a means of comparison with the section of a pregnant *Macacus* described to the Society by Drs Hart and Gulland in January 1893. Attention need only be directed to the pelvis. Fortunately, the section had in this region closely followed the middle line, only in the region of the urethra the cut was a little to the right of the middle line. The three canals—urethral, vaginal, and rectal—were practically parallel with each other and with the axis of the pelvis; but just at its lower end the rectum turned sharply backwards. The vagina measured 4 cms. in length, and the urethra 3 cms. The bladder was distended with urine, and had a quadrilateral shape; its vertical diameter was 3·5 cms., and its antero-posterior 1·3 cm. The uterus had a vertical diameter of 2 cms.; its walls were very thin, so that its antero-posterior diameter was only 2·5 mms. It had neither ante- nor retroversion; it was nearly parallel to the axis of the pelvic inlet, but its upper part was directed somewhat backwards, probably on account of the distention of the bladder. The ovary, which measured 1 cm. in length, lay immediately above the level of the uterus, and had a vertical direction. The Fallopian tube also ran vertically. Behind the uterus the rectum formed a distended, nearly straight tube. From anal aperture to the opening of the vagina measured 2·7 cms.

(*b*.) A FŒTUS WITH SO-CALLED CAUDAL APPENDAGE AND OTHER DEFORMITIES, which had been kindly handed to him for examination by Dr C. A. Butchart. The mother was a multipara; but there was no history of any abnormalities in her previous labours. She and her husband were both alcoholic. The fœtus, a female, weighed 1500 grammes, and had a total length of 38 cms., and a breadth, with the arms outstretched, of 41 cms. The length from vertex to perineum was 24 cms. The circumference of the head in the plane of the ears and mouth was 28 cms., that of the shoulders was 31 cms., and that of the trunk below the axillæ was 27 cms. The length of the arm was 16·5 cms., and of the leg 14 cms. The cranial vault was closed at the back, and also above, except in an area immediately behind and above the eyes. The spinal canal was also closed, save in the lumbar region, where the spine was seen with a marked twist to the right side. Immediately below the spina bifida was a caudal appendage 4 cms. in length and 7 cms. in circumference, with a small papule at its lower end. It was covered with skin, and seemed to consist only of subcutaneous tissue and fat. The legs were fixed in an extended position, and the feet were clubbed. Frozen sections were made of the specimen.

(*c*.) A LARGE STILL-BORN INFANT WITH INTRA-CRANIAL HÆMORRHAGES, which Dr A. T. Sloan had sent to him to discover the cause of the still-birth. The mother was an viii.-para, who in all her previous confinements had given birth to living infants. The present labour was an easy forceps case, instruments being needed on account of the head lying too far forward and not coming down well. No force was needed, as the pains were strong. When the head was born the cord was seen to be coiled once very tightly round the neck; but as the shoulders were expelled not three minutes after the head, the cord, of course, at once slackened. The placenta appeared normal. The infant, a female, weighed 3638 grammes; the total length was 51 cms.; from vertex to umbilicus was 26 cms., and to symphysis pubis 32 cms.; whilst from umbilicus to heel was 25 cms. The head circumferences were:—In O.M. plane = 39 cms.; in O.F. = 35 cms.; in S.O.B. = 33·5 cms. The head diameters were:—O.M. = 15 cms.; O.F. = 12 cms. S.O.B. = 10·5 cms.; Bi-P. = 12 cms.; and Bi-T. = 10 cms. The circumference of the shoulders was 39 cms.; of the trunk under the axillæ, 33 cms.; at the level of the ensiform cartilage, 33·5 cms.; and at that of the umbilicus, 31 cms. The thigh measured 16·5 cms. in circumference, and the upper arm 11 cms. The head was abnormally well ossified, for the anterior fontanelle measured only 1·5 cm. antero-posteriorly by 1 cm. transversely, and there was no posterior fontanelle at all. The left parietal over-rode the right parietal, and the latter was also overlapped by the right half of the frontal bone. There was a small bruise on the left half of the frontal near the anterior fontanelle (forceps mark?), and on the right half of the frontal was a spoon-shaped depression in front of and slightly above the right ear. Blood was issuing from the nose. Under the spoon-shaped depression was a meningeal hæmorrhage over the right frontal lobe, and there was a considerable quantity of blood at the base of the brain surrounding the medulla oblongata. These hæmorrhages were doubtless the cause of the still-birth.

(*d.*) A LARGE PLACENTA FROM A CASE OF HYDRAMNIOS, which had been given to him by Dr Graham of the Cowgate Dispensary. The placenta weighed 68·3 grammes, measured 24 cms. by 18 cms., and had a maximum thickness of 4·5 cms. The cord was 40 cms. in length and markedly thick. The patient from whom the specimen came was a iv.-para. Her first two confinements were at the full term, her third at six and a half months, and the present (her fourth) at seven and a half months. In this labour there was considerably more than two quarts of liquor amnii, and notwithstanding the large size of the placenta, the infant, a male, was small, and died in twelve hours. Unfortunately, no autopsy was permitted. The case illustrated the fact that occasionally hydramnios is associated with, and perhaps caused by, hypertrophy of the placenta. The placenta itself had apparently a normal structure.

(*e.*) A FŒTUS WITH ANENCEPHALUS AND SPINA-BIFIDA IN THE CERVICAL REGION, which had been given him by Dr D. Berry Hart, and of which frozen sections had been made. It was a female, weighed 1240 grammes, and had a total length of 21 cms., and a circumference round the shoulders of 31·5 cms. It showed the usual anencephalic deformity.

All these specimens were examined in the Royal College of Physicians' Laboratory.

IV. *Prof. Simpson* showed a CYSTIC TUMOUR OF THE LEFT OVARY, pedunculated and twisted to the right. It had extensive adhesions to the omentum. The contents were brown viscid fluid and some degenerated tissue, remains of septa between the original cysts. The wall was thick and soft. There were two nodules on the Fallopian tube, somewhat suggestive of malignant tendency. This specimen was removed from a woman aged 29, who three months ago was safely delivered of her sixth child. She was specially "large" during pregnancy, and has since remained so, the tumour reaching to within 1½ inches from the ensiform. The vagina and cervix were noted p.v. to have assumed the senile type, and at the operation the uterus was seen to be much atrophied. The right ovary was healthy.

V. *Dr Haultain* read a paper on THE ELECTRICAL TREATMENT OF FIBROIDS AND SUBINVOLUTIONS OF THE UTERUS, and *Dr Milne Murray* read a NOTE OF A CASE OF FIBROID TUMOUR TREATED BY ELECTRICITY. These papers will appear in a future number of this Journal.

The President regarded the two papers as a distinct contribution to treatment by means of electricity. He agreed with Dr Milne Murray that our treatment should be more empirical. The question which would be most canvassed in these papers was the diminution of the tumour; and Dr Haultain and Dr Murray had both recorded most striking cases of this. In other hands, it might be thought that there was a mistake in diagnosis, but the record of these cases by such careful observers placed the matter beyond doubt.

Prof. Simpson thought that the Society was indebted to Dr Haultain and Dr Milne Murray for the interesting observations embodied in their communications. There had been much discussion as to the value of the electric current in the treatment of uterine disease, not always conducted in the best style of controversy, and it was satisfactory to have straightforward records of cases observed by such competent authorities. Some years ago Dr Fraser Wright had laid before the Society the results of the electric treatment carried out in a series of cases in his (Prof. Simpson's) ward. In none of these cases had there been complete disappearance of the tumour, but in several there had been distinct diminution, in still more there had been early and marked relief of the local suffering and lessening of the hæmorrhages, and general improvement of the patient's health. It would be interesting to hear from Drs Haultain and Milne Murray what had been their experience in the use of electricity in inflammations around the uterus, as in some of the cases in the ward inflammatory deposits had disappeared under the application of the current.

Dr Berry Hart remarked that Dr Haultain and Dr Milne Murray had attempted a very difficult task—the relation between treatment and cure. This was specially difficult in those minor gynæcological cases where there was a tendency to spontaneous betterment, often of an astonishing nature. Both papers were able; but he thought Dr Haultain's the more enthusiastic, and that there was less optimism as to the value of electricity in Dr Murray's. This, however, was a matter of opinion. His own opinion in regard to electricity in the treatment of endometritis and fibroids was, that it was tedious and disappointing, and that it did not give such good results as curetting or removal of the appendages. These operations had the great advantage of being done at one sitting, and of one being able to control thoroughly the antiseptics at the time. Dr Murray's case was a very remarkable one, but he himself had seen a fibroid tumour the size of a six months' pregnancy disappear without treatment, and also large hypertrophies of the uterus spontaneously cure. Many forms of treatment now exploded were once advocated because they cured. This should always be kept in mind. What one wanted to know in regard to many gynæcological cases was the proportion of cures under no special treatment, where a favourable prognosis was given, and good general hygiene enforced. He had given electricity a fair trial, and had now abandoned it without regret. He had listened with great pleasure to both papers.

Dr Haig Ferguson had listened with very great interest to both Dr Haultain's and Dr Murray's papers, and thought they were to be congratulated on the excellent results which they had obtained. He thought, however, there was a tendency to forget the good results which, in the majority of cases of subinvolution, were obtained from curetting the uterus after previous dilatation of the cervix. This method seldom failed to be successful in those cases in which it was suitable, and it was well clearly to keep in view that it was only in the comparatively rare cases of endometritis and subinvolution, where this treatment failed, that electricity would come in. In such cases, and especially in those where there was much chronic thickening of the uterine substance, electricity was of great value. As regards estimating the diminution of fibroid tumours under electrical treatment, one must keep in mind that these tumours varied in size apart altogether from treatment. Dr Ferguson had seen cases of diminution in height of as much as 2 inches from mere rest in bed and no other treatment. One possible danger of Apostoli's method Dr Ferguson had never seen mentioned, and that was the passage of the intra-uterine electrode through the uterine wall into the peritoneal cavity. In one case he had seen, the sound (though carefully and gently passed in the usual way) almost always passed through the uterine wall on its introduction. In this case, had great care not been taken and accurate measurements kept, the current might unwittingly have been transmitted through the abdominal contents,—with what result it would have been hard to say. The patient suffered no inconvenience from the mere passage of the sound through the soft uterine substance. After the phenomenon had been clearly demonstrated, however, it was judged wiser to refrain from the use of a sound in her case. The patient had had on previous days several applications of electricity, before this curious state of matters was noticed, but needless to say this treatment was discontinued.

Dr Haultain, in reply, said he was very pleased to have had his paper so freely discussed by those who, from practical experience in the subject, were competent to do so; as a great many of the arguments against this method of treatment, both said and written, had been based upon purely theoretical grounds, the authors, in many cases, never having even deigned to give it a trial. And it seemed to him, from the bitterness with which some laparotomists assaulted this method of treatment, that they must have a certain deep-seated belief in its value, and thus feared a sensible diminution in their means of livelihood. As Dr Hart said, he (Dr Haultain) was an enthusiast; but he might say he was a converted sceptic, his conversion being due largely to Dr Milne Murray, many of whose cases of cure and improvement he had had the pleasure of seeing. Dr Hart's assertion of the cure of the patient being frequently due to imagination he did not for a moment entertain. He had too much experience to accept entirely the statements of hysterical women, and, as he had already mentioned, it was generally the patient's friends who first noticed the marked improvement in her general condition. He quite agreed with Dr Hart that tumours sometimes disappeared without treatment. Cancer of the mamma, after being verified by microscopic examination, had been known to disappear. The very rarity of these cases merited their description; but he thought because such had been known to have occurred, it would be a pity to treat all fibroids on the expectant method, specially when one got such excellent results from electricity as he had stated. As regards the cases of chronic endometritis treated, the symptoms and signs were in all well marked, and most of them had previously been curetted by most competent hands. Naturally one would never think of treating endometritis, as a rule, with electricity till the curette had been tried and failed, as in most cases curetting succeeded. Both Drs Haig Ferguson and Dr Fordyce considered there was danger in the treatment; but as far as his experience went he never had a case which gave him the slightest uneasiness. He had the pleasure of being present when the uterus was perforated as described by Dr Haig Ferguson, but this he considered a mere accident which might at any time happen during the ordinary passage of the sound. He had never met with sloughing like that to which Dr Fordyce referred. This probably was due to too high currents being used, such as 200 to 250 milliampères. How Dr Fordyce had not got better results from the current as a hæmostatic seemed quite inconceivable, as with him (Dr Haultain) failure was the exception. He must ask Dr Murray to answer Prof. Simpson as regards the effect on pelvic inflammatory deposits, as he had not given it a sufficient trial in these cases. He must again thank the Society for the interesting discussion, which he hoped might have the result of removing a deal of the scepticism which still existed.

Dr Milne Murray, in reply, said that with reference to Prof. Simpson's inquiry as to the effect of electrical treatment on cellulitis, he had reported one case in which an extensive cellulitic deposit had been removed; and in a report on the cases he had treated within the past four years, which he hoped soon to present, he should record another in which a large mass had also disappeared under a comparatively small number of applications. He had some difficulty in understanding Dr Berry Hart's position in regard to such cases of fibroids as the one just recorded. Did Dr Hart mean to say that, in the case of a woman with a steadily increasing bleeding fibroid, which had proved obdurate to all the other remedies, we should simply say to her, "Well, some of these tumours diminish without any treatment at all," and depart? That seemed to him to be the practical outcome of Dr Hart's criticism. On the other hand, he (Dr Murray) would like to emphasize the fact that here was a woman in whom a fibroid tumour had steadily grown for many months, in spite of the fact that the hot douche and ergot had been applied without intermission, and who for nearly six months had been practically bed-rid; and yet who, in less than a month after the electrical treatment had been begun, was able to move about freely without any pains to speak of, and in whom, in about twelve months, the tumour had practically disappeared. He left such a result to speak for itself. As regards curetting, his experience differed from that of Dr Hart. He had had several cases in which curetting had failed to cure endometritis, and he mentioned one in which curetting on four several occasions had been followed by pregnancy and abortion at the third month. In less than a year after electrical treatment she had been confined of a child at term. He strongly held that electricity was a means of curing certain cases of endometritis which had resisted the most careful and skilful use of the curette. As to the dangers of electrical treatment, he would like to say that in skilful hands they were very trifling indeed. He had made nearly 3000 applications, and with the exception of the first case which came under his care, he had never any cause for the least anxiety. He did not attempt to answer Dr Haig Ferguson's query as to what would happen in the case of a sound passed through the wall of the uterus. He could not conceive that any one fit to be trusted with a sound could ever make such a blunder, and there was no doubt that the passing of the sound in many of these cases required care and skill, but that it could be accomplished without harm his experience had proved.

VI. *Dr J. W. Ballantyne* read NOTES OF A CASE IN WHICH PREMATURE LABOUR WAS INDUCED FOR CONTRACTED PELVIS (USE OF CHAMPETIER DE RIBES'S BAG), which will appear in a future number of this Journal.

Dr Haultain said it was gratifying to him to find that not only had Dr Ballantyne been induced to use Champetier's bag, but that the result had been so eminently satisfactory. It entirely agreed with his own experience; for since reading the results of his experience to the Society, he had had to induce labour in two cases, in both of which the bag had given the greatest satisfaction.

VII. *Prof. Curatulo's* paper on THE THIRD STAGE OF LABOUR, and *Dr A. Lockhart Gillespie's* communication ON THE PRESENCE OF DIFFERENT ALBUMOSES IN THE AMNIOTIC FLUID, were held as read, and will appear in a future number of this Journal.

ROYAL MEDICAL SOCIETY.

March 2.—Dr Pringle in the Chair.

Mr Gallie gave a communication on a case of Recovery after Removal of a Cerebral Tumour, exhibiting the patient (who had been operated upon three years ago), and also naked-eye and microscopic specimens of the tumour. The patient, being at the time 43 years of age, first came to the Royal Infirmary in January 1891 complaining of constant headache and weakness of the left arm and leg. In 1866 he had fallen on his head from the third floor of a house, and though unconscious for an hour felt no serious after-effects. The onset of the present illness was gradual, there appearing first the headache, then weakness of left arm, and later of left leg, and subsequently twitching of left side of face, with some interference with articulation. At the time of operation (March 1891) the symptoms had become rapidly worse, there being constant headache, paralysis of left arm and leg and of left side of face, impairment of speech, of memory, and of hearing on left side; there were also present double optic neuritis, and a hard tumour, about the size of a walnut, lying to the right side of the centre of the vertex of the skull, 3¾ inches behind the glabella. The diagnosis was a tumour (probably sarcomatous) occupying the middle of the right motor areas. Trephining was performed, and a soft red tumour removed, which on examination appeared to be sarcomatous. Since the operation there has been an uninterrupted recovery,—there being a gradual disappearance of the headache, paralysis, and impairment of the hearing, vision, speech, and memory.

Dr Leslie, in moving a vote of thanks, thought that the tumour resembled an endothelioma.

Mr Stewart thought that the non-recurrence of the disease within three years was against the view that it was sarcomatous.

The President and Dr Giles also spoke.

Mr Gallie replied.

There next took place a debate on the question—Is State Legislation for the Compulsory Treatment of Habitual Drunkards advisable?

Dr Watson led for the affirmative. He first defined the classes of drunkards for which legislation was proposed, and then passed on to consider the various measures or absence of measures at present in use for the treatment of these cases. He finally pleaded for a system of State legislation conducted on suitable lines, and with due regard to legal requirements, as being the best means of modifying the evils, both in the interests of the individual and of the State.

Mr W. Macrae Taylor moved an amendment in the direct negative. He said that the tendency has hitherto been to regard drunkenness as a sin, vice, or crime, rather than, as it really is in the majority of cases, as a disease which is due to heredity or to over-exertion of higher brain function, or to both. Drunkenness is an effect, not a cause, and it becomes habitual only where moral sense and conscience have already become paralyzed. The methods of the State are thus too clumsy to deal with such a delicate and complex question as habitual drunkenness. The moral influence of "retreats" was criticised in this connexion. If the State is to minimize the evil it must attack its causes. This would be effected by the improvement of the condition of the poor and by the introduction of such measures as the Gothenburg system, rather than by the compulsory restraint of the individual. The *cure* of the disease must be left to those most competent to deal with it, the medical profession.

Dr Leslie seconded the affirmative.

Dr Welsh, in seconding the negative, complimented Dr Watson on the moderation with which he had stated his case. He pointed out that already a large proportion of incurable drunkards are under State control as insane or as criminal alcoholics. As to the latter, he concurred in the desire for their more intelligent control, but argued that, these apart, any criterion of drunkenness is too uncertain, for it would include either so few as to be inadequate, or so many as to be impracticable, half of the world requiring to become the keepers of the other half who drink. He argued—(1) that drunkenness as a disease has not yet been shown to be curable with sufficient certainty to justify legislative interference, and (2) that its treatment could not be made compulsory without destroying the factor of voluntary self-effort, which, more than any other element, is essential for its cure. The desire of a drunkard to be cured was the first and the essential step towards his recovery.

A prolonged discussion ensued, which was participated in by Drs Giles and Hamilton, and Messrs Fleming, Greig, Stewart, Martine, and Gallie, most of whom spoke on the side of the affirmative.

Dr Watson and Mr Taylor replied.

The motion was carried by a large majority.

March 9.—Dr Hutchison in the Chair.

Dr Orr exhibited a Hæmatoma in the broad ligament which he had exhibited to the Society a few weeks previously. This had been cut in section, and proved to be, as was diagnosed, an extra-uterine gestation which had ruptured between the folds of the broad ligament.

Dr Hamilton and Mr Stewart briefly referred to the value of the communication.

Dr Orr replied.

Dr Orr next gave a communication on a case of Intestinal Obstruction of three days' duration in a woman æt. 65. This was found on abdominal section to be due to a volvulus, below which was a stricture of simple nature, admitting the little finger. Complicating the case was a large fibrous ovarian tumour lying in the right iliac fossa, but arising from the left ovary. This tumour was removed, an artificial anus was formed, and the mesial abdominal wound closed. Patient died of heart failure fifty-two hours after operation. The pathological specimen from the case was shown to the Society.

Mr Briggs moved a vote of thanks, and Dr M'Carthy and Messrs Fleming, Garbutt, and Gill spoke.

Dr Orr replied.

Dr M'Carthy read his Dissertation upon Empyema. He said that empyema should be regarded as an abscess, and treated as such by evacuation of the pus and obliteration of the abscess cavity. This is best performed by means of a free incision: aspiration, as dangerous and insufficient, must be avoided. No case is too bad for operation, and delay is unpardonable after pus has been found. Strict antisepsis must be observed until the wound is healed. The patient should not be kept in bed longer than is absolutely necessary. Exercise favours both the absorption of the pus and the expansion of the lung.

Mr Garbutt moved a vote of thanks, and asked a few questions on the treatment of cases of empyema. This was seconded by the President, who highly complimented Dr M'Carthy on his choice and treatment of the subject of dissertation.

Drs Orr, Hamilton, and Crerar, and Messrs Stewart, Hughes, and Bowes also took part in the discussion.

Dr M'Carthy replied, and his dissertation was accepted by the Society.

March 16.—Dr Hutchison in the Chair.

Mr Hutton read his second qualifying communication on Congenital Tuberculosis. He mentioned the evidence as to its occurrence and frequency, and then considered the question of transmissibility of tuberculosis by the placenta and by the sexual elements.

Dr Leslie, who moved a vote of thanks, held the opinion that tubercle bacilli could be transmitted probably only through an unhealthy placenta, and thought that some of the cases of tuberculosis appearing in children some years after birth were due to such transmission.

Dr C. C. Easterbrook seconded the vote of thanks, and was of opinion that a more frequent microscopic examination of the placenta in tubercular mothers would shed an important light on the pathology of hereditary and congenital tuberculosis.

Dr Orr referred to the rarity of English writing on the subject, and was of opinion that the occurrence of congenital tuberculosis was a strong proof of the casual agency of the tubercle bacillus in phthisis.

Mr Hutton replied.

The Society accepted the communication.

Mr K. MacLean read (for Dr James Ritchie, Oxford) a paper on Some Cases of Anthrax in Man.

Drs Mackay, Giles, and Leslie spoke. The Society gave a unanimous vote of thanks to Dr Ritchie for his kindness in forwarding the paper, and hoped that other old members would in a similar practical way show their continued interest in the Society.

Dr C. C. Easterbrook then read his Dissertation on Pyrexia. By "pyrexia" he meant a morbid elevation of the body temperature, as ascertained with the clinical thermometer. It was to be differentiated from "fever or feverishness," which was a distinct morbid physiological process, consisting in derangement of the body heat, and manifested usually by pyrexia (rise of the temperature), as well as by other phenomena. Pyrexia could occur without fever, and fever without pyrexia. The distinction between fever and pyrexia rested upon the distinction between heat and temperature. The body heat was a form of energy produced in and lost from the body, and estimable by the calorimeter. The body temperature was a measure neither of the heat produced nor of the heat lost, but merely expressed the relation between production and loss, and was estimated by the thermometer. The universal adoption of the Centrigrade scale by civilized nations was strongly recommended. Dr Easterbrook then approached his subject by the channels of physics and physiology. He considered the effects, transferences, transformations, and sources of heat in the body, with their practical applications. Hæmoiothermal (warm-blooded) animals differed from all other matter in being able normally to maintain a more or less stable and constant temperature, irrespective of that of their surroundings. The seats of the production and loss of heat in the body were discussed, and their relation to the nervous system. In the case of heat-loss we had to do with the fairly-well understood nervous control by the pons-medulla of the vascular and glandular activity of the skin, and of respiratory activity. In the case of heat-production we had to do with the nervous control of metabolism. The researches and experiments of Gaskell, Macalister, Hale White, Ott, and others, were referred to; the results of these were to individualize a function of thermogenesis in warm-blooded animals with probable centres in the basal ganglia (especially in the corpora striata). Macalister's higher thermotaxic mechanism to co-ordinate the two lower mechanisms was referred to. Dr Easterbrook applied the foregoing to the explanation of pyrexia in disease, especially the pyrexia of fever. He discussed the so-called neurotic and metabolic theories, and concluded that the true theory of febrile pyrexia was *neuro-metabolic.*

Dr Rainy moved a vote of thanks.

Dr A. A. Scot-Skirving seconded. He referred to cases of unexplained pyrexia, and also to the use of antipyretics, of which antipyrin was not without its dangers.

Dr John Orr referred to hyperpyrexia in hysteria and in rheumatic fever.

Dr Murray Leslie referred to pyrexia in hysteria and in insanity.

Mr Stewart referred to the occurrence of rigors in fever.

Dr Easterbrook replied.

The dissertation was accepted by the Society.

Dr Bremner read a communication on Two Fatal Head Cases of Intra-cranial Disease following Middle-ear Disease.

Dr Rainy proposed, and Mr Stewart seconded a vote of thanks.

Drs Skirving and C. C. Easterbrook spoke.

Dr Bremner replied.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

A New Treatment of Morphine Poisoning.—Some of the readers of the *Therapeutic Gazette* will probably remember the interesting contribution from the Laboratory of Therapeutics of the

Jefferson Medical College made by Dr Thornton, in which he proved that permanganate of potassium was the best chemical antidote we have for phosphorus poisoning. Undoubtedly this influence of the permanganate is exercised through its powerful oxidizing properties; and at the time of his experiments Dr Thornton proved to his own satisfaction that the permanganate possessed the power of oxidizing many of the vegetable alkaloids, notably morphine. Unfortunately he did not continue his researches, and in consequence failed to report the results of his studies. In the last few weeks Dr Moor, of New York, has demonstrated upon animals and upon himself that as much as 3 or 4 grains of the sulphate of morphine can be taken internally, provided a similar or double number of grains of permanganate of potassium are also swallowed at the same time or very shortly after. The results of these studies are of so much importance clinically, in view of the frequency of opium poisoning, that we trust that further observations will confirm their accuracy; and it would seem that, both on theoretical and practical grounds, there is little doubt that this happy conclusion will be reached. Doubtless many studies will be made within the next few months, and clinical observations will be reported, which will place this remedial measure upon a definite basis.—*The Therapeutic Gazette,* February 15th, 1894.

PIPERAZINE IN THE URIC ACID DIATHESIS.—The good results reported from the use of piperazine in the treatment of the uric acid diathesis by Biesenthal and other authors have incited me to test the remedy in several cases of this kind. I employed it in the case of a female suffering from arthritis deformans (urica), and in five cases of uric acid gravel, in three of which the patients consulted me on account of catarrhal trouble of the bladder. In the first place, I will present the results uniformly observed in all the cases, with the exception of the last one, in which only 3 grammes of piperazine were administered. These results were not obtained until after the use of at least 10 grammes of the remedy in each case, and during its continued administration:—1. In all cases diuresis was considerably increased. A patient suffering from arthritis deformans (urica) passed on several occasions double the usual daily quantity of urine. 2. The specific gravity of the urine was always increased, its acid reactions diminished; the urine, however, was never neutral or alkaline. 3. The appetite was never affected by the remedy, and no disturbance of the general health was observed which could be attributed to the action of piperazine. 4. Subcutaneous injections of piperazine—even in minimum doses of 0·05 to 0·10 grammes—are painful and dangerous. Violent pain is experienced about ten minutes after the injection, and lasts from one-quarter to one-half hour. After several hours there is developed at the place of injection a firm, painful infiltration, lasting for days, which sometimes goes on to suppuration. Amongst forty subcutaneous injections of 5 to 10 centigrammes, despite strict antiseptic precautions, abscesses formed in two instances, which both healed very slowly, and one of which assumed a phlegmonous character. I cannot understand why some authors, as, for example, Mosler, consider the subcutaneous injections of piperazine as painless. 5. Between the effects of the pure base, piperazine, and its salts, the nitrates, no difference exists. Since the salt, however, exhibits a more constant composition than the base, and is far less hygroscopic than the latter, it is preferable to pure piperazine on practical grounds. 6. Before judging of the action of piperazine, it is necessary to administer it in sufficiently large doses. The differences in the observations regarding the utility of the remedy are partly attributable to the slight action of the drug upon the organism. Success can only be obtained by a systematic and prolonged administration of sufficient doses (1 gramme daily for fourteen days), as is clearly pointed out in Biesenthal's monograph. (Dr Hermann Wittzack, Frankfort-on-the-Maine, *Munchener Med. Wochenschrift*, July 11, 1893).—*New England Medical Monthly*, December 1893.

FERRATIN.—Banholzer, of Prof. Eichhorst's clinic, relates (*Centralbl. f. im Med.*, January 27th, 1894) his clinical investigations with this preparation introduced by Schmiedeberg (*Épitome*, December 2nd, 1893, par. 461). In the cases in question the amount of hæmoglobin, in most instances, and the number of red cells were estimated. In anæmia following acute disease the hæmoglobin was quickly increased (over 5 per cent. in eight days), as also the number of red cells. In chlorosis the same results were visible even in a more marked degree. The general condition was improved, and the increase in weight in most cases considerable. The good effects on the appetite were obvious. When compared with Blaud's pills, which also give good results, ferratin was found to lead to greatest increase in the hæmoglobin. The results of these investigations are set forth in tabular form. The author concludes that ferratin is a prompt, useful, and harmless remedy in chlorosis and anæmia following past disease, and is well deserving of further trial.—*British Medical Journal*, February 17th, 1894.

SALOPHEN IN ACUTE RHEUMATISM.—In the *Medical Record* of July 29th, 1893, Dr D. B. Hardenbergh of New York Post-Graduate Medical School reports a series of cases of acute rheumatism treated in the wards of Drs Dana and Brennan, in Bellevue Hospital, by means of salophen. Conclusions:—Dosage, gr. xx., six to eight times in twenty-four hours, may be considered adequate. Tolerance:—There was no gastric, aural, or other irritant or toxic property manifested. Even when elevated doses were given no ill effects were observed. Therapeutic effect:—The average febrile period being six and one-ninth days, and period of cure less than ten days, attest great curative value. Abatement of other symptoms equally rapid; no cardiac complications; a 5 per cent. solution of menthol in gauze covered with oiled silk is a valuable adjuvant.—*New England Medical Monthly*, December 1893.

Digitalis in the Treatment of Chilblains.—Pilatte (*Sém. Méd.*, December 20th, 1893) says that in those subject to chilblains there is always arterial hypotension with peripheral vaso-dilatation. The chief indication, therefore, is to improve the circulation. For this purpose Pilatte gives digitalis internally, from 50 centigrammes to 1 gramme, 50 centigrammes of a maceration of the leaves being administered on two days a week. Caffeine and kola are sometimes substituted for the digitalis. He also uses digitalis as a local application as follows:—℞. Tincture of digitalis, 6 grammes; crystallized thymol, 3 grammes; alcohol at 70° C.; glycerine, āā 150 grammes. Careful drying of the hands and feet, followed by friction with eau-de-cologne, or camphorated alcohol, is enjoined. For the relief of the itching, tincture of iodine, lightly painted on every three or four days, is particularly useful. Fatty substances, including vaseline, should never be applied.—*British Medical Journal*, February 24th, 1894.

PERISCOPE OF OBSTETRICS AND GYNÆCOLOGY.

By J. W. Ballantyne, M.D., F.R.C.P. Ed., F.R.S.E., Lecturer on Diseases of Infancy and Childhood, and on Midwifery and Gynæcology, School of Medicine, Edinburgh.

A Cæsarean Operation.—Dr Italo Salvetti records a case in which he performed the Porro-Cæsarean section in a rachitic patient aged 24 years, and not quite 4 feet in height. The operation was performed in unfavourable surroundings; but the patient made a good recovery, and the infant lived. He did not break up the child, because the uterus was in a good condition, the mother was not exhausted by a long labour, and because no obstetrician ought nowadays to sacrifice a living and viable child to save the mother, especially since embryotomy entails upon the latter as great dangers as laparotomy. The uterus was incised after it had been pulled out of the abdominal wound, and the pedicle was treated by Schroeder's method. He preferred the Porro operation, because the conjugata vera was so contracted (5·6 cms.) as never to permit of a successful premature labour, because he was operating in unfavourable surroundings, and because to render the woman sterile was to save her from future dangers.—*Gazetta Medica di Torino*, Jan. 1894.

Puerperal Infection.—In an interesting paper on this subject, Dr Prioleau details some cases, from which he draws the conclusion that there exist some rare cases of puerperal infection which are inevitable, or at least extremely difficult to avoid, notwithstanding the strict observance of antiseptic precautions both during and after labour. These cases occur when the confinement has taken place in an infected or mephitic place, when it has coincided with the evolution of an infectious disease in the parturient woman, or when it has supervened in a patient with pre-existing genital or paragenital lesions. With regard to the infection-mechanism, it may be through the entrance of air containing dangerous principles into the genital tract, or by the carrying of germs to the placental site in the blood of the mother, or by the stirring up of an old genital lesion. The treatment is vigorous antisepsis.—*Archives de Tocologie*, Jan. 1894.

VAGINAL HYSTERECTOMY FOR PROLAPSUS UTERI.—Dr Quenu, in a short paper, emphasizes the importance of choosing the right cases in which to perform this somewhat formidable operation. It should be employed in the case of women with total prolapsus, who have attained the menopause, and whose social condition necessitates an active life, and especially when the state of the perineum and vagina leaves no doubt as to the possibility of usefully restoring the supporting mechanism. It is to be always the exceptional operation, and ought to be followed by colpo-perineorrhaphy.—*Annales de Gynécologie*, Feb. 1894.

A CASE OF ERYTHEMA IN THE PUERPERIUM.—Dr S. Lipinsky has seen two cases of erythema in women during the puerperium. In one of these there appeared on the fourth day post-partum a redness not sharply marked off in the neighbourhood of the genitals, accompanied by slight swelling and great itching. The temperature, lochial discharge, throat, and urine were all normal. On the succeeding day the symptoms had disappeared; but they reappeared on the seventh day, and the erythema spread upwards to the umbilicus and downwards to the knees. Again there was a cessation of the symptoms, and again on the eleventh day the redness returned and affected the whole body and face. The genitals had been washed with carbolic lotion at the time of confinement. Lipinsky thinks that this was not a case of scarlet fever, nor of erysipelas, nor of puerperal infection, but that it should be regarded as a peculiar puerperal erythema *sui generis.—Centralblatt für Gynäkologie*, No. 6, 1894.

TREATMENT OF VENTRAL HERNIÆ FOLLOWING LAPAROTOMY.—J. S. M'Ardle records a case of ventral hernia following laparotomy in which the cause of the protrusion was want of union of the mid-stratum of the anterior abdominal wall,—that which is made up of the elastic fascia of Scarpa and the aponeurosis, formed by the fusion of the tendons of the external oblique and transversalis muscles. The writer places the causes of this want of union in the following order of importance:—(1), Failure to engage the different layers of this mid-stratum sufficiently in the sutures; (2), interposition of contused peritoneum; (3), hæmatoma not becoming soundly organized; (4), suppuration from inherent or extrinsic causes. In order to prevent its occurrence it is recommended that the abdomen be sutured in all laparotomies in the same way as for hernias, that all cavities in which blood or serum could collect be obliterated, and that catch-forceps with sharp points be used to avoid contusing the peritoneum. Mr M'Ardle then gives the details of the operation to cure the hernia, and makes his description clear by means of diagrams.—*Dublin Journal of Med. Science*, Feb. 1894.

SMALL CYSTIC DEGENERATION OF THE OVARY.—Dr F. Foerster continues his "Comparative Microscopical Studies of the Ovary" in the February number of the *American Journal of Obstetrics* with a paper on the condition known as "Small Cystic Degeneration." His conclusions are as follows:—Small cysts are commonly met with in the ovary of woman, of the sow, ewe, and cow. The small cysts are original Graafian follicles. In a process not exactly pathological the stratified epithelial lining of the Graafian follicle undergoes peculiar changes, leading to its disappearance. The epithelium first breaks up into an indifferent or medullary tissue, and from this arises myxomatous vascularized connective tissue. The type of the newly-formed myxomatous tissue varies in different animals (medullary myxomatous or fully-developed myxomatous tissue). The newly-formed myxomatous tissue is always scantily supplied with bloodvessels, which probably grow into it from without. The ovule is present at the beginning of the formation of a small cyst; later it probably perishes, owing to changed environments. The paper is illustrated by some good microscopic drawings.

THE RELATION OF PELVIC DISEASE AND MENTAL DISORDERS.—Dr G. H. Rohé gives in a tabular form the results of twenty-two cases of insanity, in which the uterine appendages were removed for ovarian, tubal, or other pelvic disease. Even in the most hopeless cases a beneficial effect upon the mental functions was obtained by the removal of a persistent source of local irritation. In a case of hystero-epilepsy, with violent maniacal attacks, lasting over eight years, complete recovery was obtained, and three cases of profound melancholia recovered sufficiently to be discharged from the hospital. In two cases there was death, certainly from septicæmia in one, and probably from that cause also in the other.—*Medical and Surgical Reporter*, Jan. 27, 1894.

A CASE OF CÆSAREAN SECTION FOR TWIN MONSTROSITY.—Drs Croston and Clarke record an extraordinary case in which Cæsarean section was successfully performed to remove a double monster. Dr Clarke says:—"I have been unable to find abnormal size of the fœtus among the enumerated occasions for the operation, and I supposed at the time, and since, that this was the first ever performed on account of a monstrosity. The mention of this case, however, brought to light the fact, as Dr Harris has since written me, of an operation performed in Philadelphia in 1881 by Dr James Collins and the late Dr Philip Leidy, and hitherto unreported. The monster was a double female, one having a unilateral hare-lip, and weighed fourteen pounds. . . . The woman died in three days." The case of Drs Clarke and Croston is not, therefore, the first case, but it is the first successful one.—*Boston Medical and Surgical Journal*, Dec. 1893.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Glycosuria as an Additional Symptom Indicating the Neurotic Origin of Dermatitis Herpetiformis.—Many cases of dermatitis herpetiformis have been reported in which severe nervous shock has appeared to be the essential etiological factor in its production. But no particular change in the character of the urinary secretion has been noted. Winfield, however, relates four instances in which sugar was found in the urine. In all there was also prolonged mental strain, anxiety, sudden fright, or much worry, and these are recognised causes of glycosuria.—*Journal of Cutaneous and Genito-Urinary Diseases*, Nov. 1883.

Adenoma Sebaceum.—Pollitzer contributes an instance of this rare disease. The patient was a man, aged 25, a waiter, from Austria. The complaint had commenced six or seven years before, at the upper margin of the single patch then existing, spread slowly downwards, and remained stationary for three years. It consisted of a vertical line situated on the left side of the forehead, made up of about thirty obtusely conical and rounded papules, most of which were as large as a medium-sized barley-corn. At the summit of nearly all a dilated sebaceous follicle was seen filled with a brownish plug of sebum, which could be partly squeezed out. The entire patch presented a diffuse bright red appearance, without telangiectases, nor were there any subjective sensations. Sections showed that the papules were composed of sebaceous gland tissue, which had preserved the lobular arrangement of the normal gland. There was no hypertrophy, but an increased number of lobules; it was thus an adenoma. In some of the sections epithelial structures resembling the syringo-cystadenoma of Török, like but not identical with sweat-gland coils.—*Journal of Cutaneous and Genito-Urinary Diseases*, Dec. 1893.

Ingrowing Hairs.—Under this name Guthrie describes, not the erratic growth of eyelashes called trichiasis, but a condition in which solitary hairs, commonly facial, grow inside the skin, and give rise to a troublesome and unsightly affection. There are small bluish-white pimples, varying in size from a pin's head to that of a small pea, situated usually about the chin where the beard is thickest. The patients are adults who have shaved clean for years. The pimples have been noticed to be becoming larger, and are regarded as comedones. They have been treated by pressure till suppuration has been occasioned, but with its subsidence the original form is regained. Close inspection shows that these contain "giant hairs." Such are dark and thick, and can be painlessly pulled out. The hair breaks off easily, and is much thickened. These thickened hairs break off when dragged on by a blunt razor, the remnant grows, but the orifice of the follicle is blocked, and the hair bends on itself like a watch spring. The same condition may occur in the axilla or under surface of the penis, and give rise to a retention hair cyst. The treatment consists in gently extracting the giant hairs by forceps, in opening the retention cysts, and removing the coiled up hair.—*Practitioner*, Jan. 1894.

WIDESPREAD PIGMENTATION, WITH KERATOSIS OF THE HANDS AND SOLES FOLLOWING THE INTERNAL USE OF ARSENIC.—Dr Carrier of Detroit relates a case of a man aged 32, who had had psoriasis since he was six weeks old. Arsenic was prescribed for this, and he took it uninterruptedly for two years and a half, in doses of from five to ten minims three times a day. Somewhat suddenly the entire surface of the body assumed a chocolate hue. So marked, indeed, was this that he was taken for a mulatto, and refused the rent of a house. The pigmentation gradually disappeared from the face, hands, and feet, but persisted on the other parts, the spots of psoriasis shining white against the dark background. But besides that, the palmar surface of the hands became thickly studded with warty growths, from the size of a pin's head to that of a pea, hard, deep-seated, and painful; several similar lesions are found on the back of the last phalanges, and on the soles. In order to work or walk with any comfort, he is obliged to pare the growths with a razor. This condition of the palms and soles began six months after he commenced to take the arsenic. It is not mentioned whether in this case there was any hyperidrosis as has been observed in others.—*Philadelphia Medical News*, 3rd Feb. 1894.

THE TREATMENT OF SYPHILIS MALIGNA PRECOX.—Wickham, in an interesting letter, epitomises some remarks of Professor Fournier at the St Louis Hospital. According to him the tertiary accidents of syphilis may be met with in any year of the existence of the syphilitic subject dating from the primary chancre. These accidents are most frequent in course of the third year. Statistics indicate that even the second year is very prolific in tertiary phenomena; indeed, more than any except the third. Even in the first they are often met with, and these constitute syphilis maligna precox. These lesions have special characters; so definite are they sometimes that at a glance the diagnosis of early malignant syphilis may be established. Thus the lesions ulcerate and spread rapidly; they are present in large numbers, and disseminated; they necrose deeply and very markedly; they are particularly rebellious to specific treatment, and are accompanied by a very bad condition of the general health. The local management consists in getting completely rid of pus and scabs, cleaning antiseptically with boric acid baths, boric vaseline, or boric compresses. When thoroughly antiseptic the limbs should be surrounded with a wet dressing of boric-alcohol water, and on the superficial ones mercurial plaster, changed daily. Internally, if much prostration and anæmia, Fournier avoids mercury for the time, and prescribes tonics. He gives quinine or small doses of iodine in extract of krameria. The food is regulated, milk given to drink, and the urine watched. No iodide of potassium is administered. Fever and insomnia must be combated. Generally by this treatment alone strength is gained, fever disappears or lessens, and prostration is recovered from; indeed, the ulcers may heal in two or three weeks. When improvement is shown, mercury may be tried cautiously.—*Brit. Journ. of Dermatology*, Jan. 1894.

SURGICAL PERISCOPE.

By KENNETH M. DOUGLAS, M.D., F.R.C.S. Edin.

PEDUNCULATED HYPERTROPHY OF PROSTATE.—Dr Legueu publishes the case of a patient in whom prostatic hypertrophy (proved by microscopic examination to be truly such) simulated in symptoms and in aspect a vesical tumour. Hæmaturia, persistent for a time, and occasionally excessive, with long intervals of health, was the prominent symptom; the patient had also frequent micturition and occasional stoppage of the outflow of urine. The tumour—pear-shaped and as large as a mandarin orange—was removed by supra-pubic cystotomy, and the case did well, but there has persisted since a loss of the contractility of the bladder, so that the catheter has to be regularly employed, which before the operation was not needful. M. Legueu points out that it is in this respect that the majority of prostatectomies fail, from the thickened and inelastic state of the bladder wall.—*Annales des Maladies des Organes Génito-Urinaires*, December 1893.

THE RELATION OF THE BACTERIUM COMMUNE COLI TO APPENDICITIS.—Dr George R. Fowler of Brooklyn makes a preliminary report to the *New York Medical Journal* upon the relation between the bacterium commune coli and appendicitis, a relation which he considers one of cause and effect. His belief is based upon the observations of eight cases reported upon for appendicitis. Cultures were made at once from the seat of disease and from the appendix. " Of the entire series of eight cases, seven gave pure cultures of the bacterium commune coli. In one case the bacillus pyogenes fetidis was obtained, in addition to the bacterium commune coli (examination made by Dr E. H. Wilson, pathologist to St Mary's Hospital). In four cases encysted serofibrinous deposits (encysted intra-peritoneal suppurative peritonitis) were present. In two cases appendical abscess existed. In one case general sero-purulent peritonitis existed. In one case no pus or serum was found. A peri-appendicitis and serous parietal appendicitis existed only; the mucous membrane lining the appendix was normal. No fæcal matter was found in the interior of the tube. The cultures were made from a patch of lymph on the peritoneal surface of an adjoining portion of the cæcum, to which the tip of the appendix had become adherent. This culture gave pure bacterium commune coli. Attempts to procure the micro-organisms from the sections of the wall of the appendix were unsuccessful, although more than a hundred sections were made and examined by Professor Van Cott and Dr Wilson."

LIGATURE OF THE INTERNAL ILIAC ARTERIES FOR HYPERTROPHY OF THE PROSTATE.—Bier carried out this mode of treatment in three cases, with considerable benefit to the patients and diminution of the size of the gland. He was led to adopt the method from a consideration of the effects of ligature of the uterine arteries in cases of fibroids, and of similar results in the treatment of goitre. —*Wiener Klin. Wochenschrift*, 1893, No. 32.

GOUTY AND RHEUMATIC APPENDICITIS.—Sir James Grant (Ottawa), addressing the Medical Association of the State of New York, narrated two cases of this nature. The first was that of a man aged 77, of gouty habit, who was during the night suddenly seized with severe pain in the region of the vermiform appendix, and other characteristic symptoms. Salicylate of lithia and lithia water were given, and large enemata of warm water administered, together with poultices locally and morphia for the pain; upon the sixth day pains in the feet were complained of, and the abdominal symptoms ameliorated, the swelling and hardness lessening so markedly as to make one believe that the deposition was of gouty nature. The other patient was a girl aged 12, vigorous and robust. On June 1st, 1893, she complained of pain and a sense of uneasiness in the feet, and general *malaise;* on June 3rd she was seized with severe abdominal pain, with tenderness over the cæcum; for this appropriate treatment was applied, but there followed a decided hardness on pressure over this region, with continuance of pain, tenderness, and general fever. On June 7th well-defined symptoms of acute articular rheumatism showed themselves in the right shoulder, elbow, and wrist, and in proportion as these signs developed the abdominal symptoms lessened in intensity, and in three days the patient was almost well. Sir James Grant concluded that in this case there was lodgment of undigested material in the cæcum, induced, most likely, by inability to assimilate the food, owing to mental overstrain and weakened nerve power, and regards the case as pointing to the occurrence of rheumatic complication as the outcome of defective assimilation, the fibrous tissue in the intestinal wall having been involved.—*Montreal Medical Journal*, November 1893.

TREATMENT OF APPENDICITIS.—Dr Porter (Fort Wayne, Indiana) concludes a paper on this subject with a summary analysis of 448 cases which he has collected from various sources, with the view of indicating the results of various modes of treatment. Of 151 cases treated by removal of the appendix during an attack of inflammation 29 died, 19·7 per cent.; of 14 treated by removal of appendix during quiescence 1 died from sepsis, 7·14 per cent.; of 188 cases treated by incision and drainage 34 died, 18·18 per cent.; and of 95 treated without operation 13 died, 13·68 per cent. The average mortality of the total number of cases was 17·23 per cent. Dr Porter does not advocate removal of the appendix in cases of abscess, unless it be found in the cavity; if adhesion exist, he regards it as safer to leave it alone.—*American Journal of Medical Sciences* (Philadelphia), December 1893.

Gastrostomy by Witzel's Method.—Professor Keen reports a successful operation of this nature done on a man aged 48, suffering from primary cancer of the œsophagus. He advocates the procedure as being effectual in preventing any leakage of stomach contents.—*Medical and Surgical Reporter*, December 16, 1893.

Part Fifth.

MEDICAL NEWS.

Queen Margaret College, University of Glasgow (Women's Department).—In addition to various other handsome gifts to the University of Glasgow, the Bellahouston Trustees have intimated the following:—A capital grant of £5000 towards the erection and equipment of buildings at Queen Margaret College for the medical and scientific instruction of the students attending there, provided the University Court is willing to undertake the pecuniary responsibility of erecting the buildings in question.

Blaud's "Tabloids" (Sugar Coated).—We have received from Messrs Burroughs, Wellcome, & Co., London, specimens of these "Tabloids," and can recommend them as an excellent preparation of a most valuable medicine.

Ipecacuanha sine Emetina "Tabloids," 5 grs.—We have also received from the same firm samples of these "Tabloids," which will be found most useful in the treatment of dysentery.

Eucalyptus Oleosa.—This is a very pure oil, containing a large percentage of *eucalyptol*, and is also sent us by Burroughs, Wellcome, & Co., and is a preparation we can highly recommend.

Carnis Suppositories "Caffyn."—These suppositories contain raw beef juice, keep well, and will be found most valuable for rectal feeding. They were sent by the Liquor Carnis Company, London.

OBITUARY.

DR SAMUEL JOHNSTON MOORE.

Dr Samuel Johnston Moore died at his residence in Glasgow on April 2nd. He had a long illness, confining him to his room for eight or nine months; although his condition underwent considerable variations, there was but little room for hope of any real recovery since last September. The evidence of a tumour in the mediastinum had been pretty conclusive for many months; at first it was suspected to be of aneurismal nature, but the development of the symptoms and the character of the slight recurring hæmorrhages seemed to mark it, since the New Year time, as of a malignant nature.

Coming to Glasgow University thirty-five years ago to study Medicine, he worked up, after a very arduous course, till for some time before his death he had one of the most important practices in Scotland, whether this be judged by the wide areas from which his patients were drawn or by the influence and social position of the families who regarded him as their trusted adviser. If any other indication of the importance of his practice were rqeuired, we might mention the large bequest made in his will for the benefit of nurses temporarily or permanently disabled; to this the residue of his estate is designated, after providing various legacies to his relatives; this residue is estimated to amount to about £50,000, and it has seldom, if ever, happened that such a large fortune has been accumulated in Glasgow from the practice of Medicine apart from inheritance.

His first start in the profession was in connexion with the Pathological Department of the Royal Infirmary in Glasgow, and this largely controlled his future work, as it no doubt laid the foundation for his shrewd practice. It procured his appointment, for example, as Medico-Legal Examiner for the Lower Ward of Lanarkshire twenty-five years ago, and brought him into notice as a witness in the Law Courts, where his clear common-sense was much appreciated. In this connexion he came to be known to many in Edinburgh. This legal experience, again, led to his services being sought by the Glasgow and South-Western Railway many years ago, and more recently by the Caledonian Railway, as their medical adviser.

A native of the North of Ireland, the qualities of his countrymen were conspicuous throughout,—warm-hearted, generous, and impulsive, with a manner more effusive and gushing oftentimes than we find in the cautious Scottish character. His leading characteristics, however, were determination and strength of will, the same qualities which enabled him, when poor and struggling, to overcome all obstacles for himself, and also to do much for the other members of his family. These qualities, combined with a wide knowledge of human nature in its various phases and in various social positions, accounted in some measure for the wonderful influence he had over his patients, getting them to submit to treatment in a way which few can manage.

Dr Moore had made a point of visiting many of the health resorts, and he frequently availed himself of the aid to be found there in the treatment of disease.

Dr Moore never held any position as a physician or surgeon to the hospitals after he was a young man, and his rapid success, both as a general practitioner and a consultant, was all the more notable on that account. At first, indeed, his success was so rapid that he incurred the adverse criticism of many of his professional neighbours, who, naturally enough, disliked one to whom some of their best patients were being attracted. Of late years, however, he seemed to have outlived all this, and had made many professional friends all over the country.

Dr Moore was unmarried, and had turned 60 at the time of his death.

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Dr Elizabeth Blackwell,—The Human Element in Sex. J. & A. Churchill, London, 1894.

Profs. A. and G. Bouchardat,—Nouveau Formulaire Magistral. 30th Edition. Félix Alcan, Éditeur, Paris, 1894.

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Dr O. Lassar,—Dermatologische Zeitschrift. Band I., Heft 1. S. Karger, Berlin, 1894.

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Part First.

ORIGINAL COMMUNICATIONS.

I.—REMARKS ON INTRA-CRANIAL SURGERY, WITH A METHOD OF ASCERTAINING THE RELATIONS OF THE CEREBRAL CONVOLUTIONS TO SCALP SURFACE.

By John Chiene, M.D., F.R.C.S. Ed., Professor of Surgery in the University of Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh, at the Discussion on Intra-cranial Surgery, on 23rd February* 1893.)

It was my privilege in 1890 to take part in a discussion in America similar to the present. In the remarks then made I gave a typical series of cases (fractures, ear disease, compression, epilepsy, tumours, hæmorrhages), which are fully reported in the 9th vol. of the Transactions of the American Surgical Association. Seeing, then, that I have no reason appreciably to alter the conclusions then arrived at, and as these cases with my remarks are before the members, I think I will, with most advantage, mainly occupy the time at my disposal this evening by describing a simple means of localizing the different portions of the brain.

Before, however, I enter on this, I may shortly state the views which I at present hold in regard to intra-cranial operations.

I have had experience in epilepsy, inflammation, abscess, tumours, and hæmorrhage.

In *epilepsy* I have only seen marked good arise from operation in cases of a distinctly traumatic origin, and particularly in cases in which the injury involved the motor areas in the neighbourhood of the fissure of Rolando. In one case I believe that the failure in giving relief was largely due to an insufficient exposure of the brain. In connexion with this remark I am of opinion that one of the main improvements in the future will be in the direction of more extensive removal of the calvarium. Hernia cerebri has been robbed of its chief terrors by asepsis.

In *tumours* the relief has only been temporary, but my experience in these has been unfortunate, as I have never yet had a distinctly encapsulated tumour to deal with.

In *abscess* I have had to deal with frontal and temporo-sphenoidal cases. In frontal abscess I have been misled by the absence of all definite symptoms, and have not operated when I should have done so. In the future I will lay more stress on the slowness of the pulse as an important symptom, and will not look for tenderness on percussion as a guiding symptom.

In cases pointing to temporo-sphenoidal abscess, I believe in an early diagnostic incision, making first for the roof of the petrous temporal and working forward, if our examination of the eye indicates pressure either on the 3rd or 6th nerves, or on the cavernous sinus; backwards if there is an absence of eye symptoms.

I have had no success in operations for septic thrombosis of the lateral sinus. An irregular temperature is the best diagnostic in these cases. The condition is a pyæmic one.

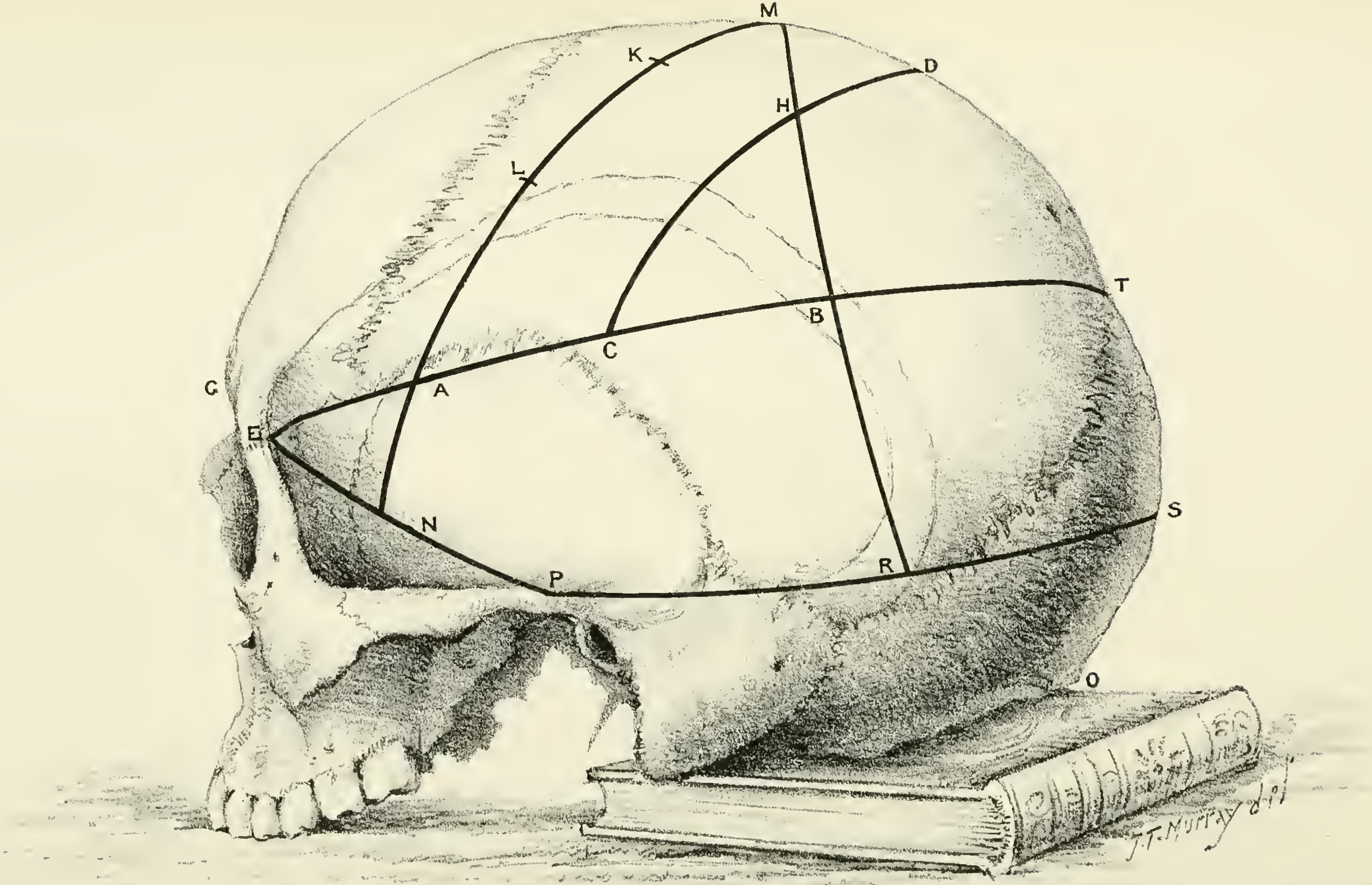
I have explored the cerebellum, but never yet had to deal either with abscess or tumour in that region.

Lastly, with regard to *intra-cranial hæmorrhage.* In non-traumatic cases indicating intra-cranial hæmorrhage with coma, I believe the skull should be opened to relieve pressure, and give what may only be temporary relief. My experience in one case indicates that a patient at the point of death may be saved by operation.

In traumatic hæmorrhages, whether intra- or extra-dural, I am most anxious to impress on the Society the great belief which I have in most carefully watching for the first symptoms that arise after the patient has passed out of the state of concussion. During the period of consciousness—one, it may be, of minutes or of hours—the patient should be constantly watched. Just at the time when the general improvement is apt to make the attendants less watchful, at that very time they must be most careful to note the early symptoms, which are often the only true guide to the seat of the lesion. In several cases I have been led into serious error, neglecting in some to operate when I should have done so, and trephining in the wrong area in other cases, being misled by the condition of the patient when seen by me, no careful observations having been taken of the first onset of irritative symptoms in the period of consciousness between concussion and hæmorrhagic compression. I have not had a successful case of trephining for inflammatory compression. I am not a believer in depressed bone as a cause of persistent compression. Hence the stress I would lay on the purification of the wound in compound fracture being the primary essential. I do not trephine mainly to elevate depressed fragments, but in order to be able thoroughly to purify the injured area.

Now let me say a few words regarding a simple method of fixing the relation of the different lobes of the brain to the scalp surface.

In addition to the motor areas around the fissure of Rolando, we now, as operating surgeons, require to know the relations of the temporo-sphenoidal lobe in connexion with ear disease, the supra-marginal convolutions in puncture of the lateral ventricle, the angular convolution in word-blindness, the occipital lobe in lesions of sight. The relations of the whole brain, except the anterior extremities of the parietal lobes, have become a necessity for the operating surgeon.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A simple, easily remembered, and trustworthy method of localization is all-important; one free from the necessity of remembering exact angles or exact measurements in inches will save a burden on the memory, altogether apart from the fact that angles must vary in different shaped skulls (the fissure of Rolando varies from 65° to 72° in its relation to the sagittal suture), and from the fact that the measurements in inches will vary with the size of the cranium and the age of the patient.

The head being shaved, find in the mesial line of the skull between the glabella (G) and the external occipital protuberance (O) the following points:—

First, The mid point (M); *second*, the three-quarter point (T); *third*, the seven-eighth point (S).

Find also the external angular process (E), and the root of the zygoma (P), immediately above and in front of the external auditory meatus.

Having found these five points, join EP, PS, and ET. Bisect EP and PS at N and R. Bisect also AB at C, and draw CD parallel to AM.

The pentagon ACBRPN corresponds to the temporo-sphenoidal lobe, with the exception of its apex, which is a little in front of N.

MDCA corresponds to the Rolandic area containing the fissure of Rolando, the ascending frontal and the ascending parietal convolutions. A is over the anterior branch of the middle meningeal artery and the bifurcation of the Sylvian fissure; AC follows its horizontal limb.

The lateral sinus at its highest point touches the line PS at R.

MA = the precentral sulcus, and if it be trisected at K and L, these points will correspond to the origins of the superior and inferior frontal sulci.

The supra-marginal convolution lies in the triangle HBC.

The angular gyrus is at B.

II.—ON INTRA-CRANIAL SURGERY.

By Byrom Bramwell, M.D., F.R.C.P. Ed.

(*Read before the Medico-Chirurgical Society of Edinburgh, at the Discussion on Intra-cranial Surgery, on February* 21*st*, 1894.)

Mr President and Gentlemen,—My experience is, of course, almost entirely limited to the medical side of the question; but, such as it is, it is much less favourable than the results which have been brought before us this evening by the surgeons would seem at first sight to show.

Intra-cranial Tumours.—Take, for example, intra-cranial tumours. In a few cases, such as that which Prof. Annandale has shown to us, very brilliant results may be obtained by surgical interference; but I venture to think that the cases in which an intra-cranial tumour can be successfully removed by the surgeon are rare. So far as my experience enables me to judge, they constitute a very small proportion of the whole. A consideration of the conditions which are present in cases of intra-cranial tumour make it easy to understand why this must necessarily be the case.

In the first place, in a certain, but very small, number of cases, an intra-cranial tumour is not characterized by any symptoms during life which enable a positive diagnosis to be arrived at. Cases of this kind are undoubtedly rare in ordinary physicians' practice. I do not, of course, refer to the cases which occur in asylums, where the headache and other symptoms are so often masked by those of mental derangement.

In the second place, in some of the cases of intra-cranial tumour in which the symptoms—such as headache, vomiting, giddiness, general epileptiform convulsions, and double optic neuritis—distinctly show (in the absence of meningitis, albuminuria, ear disease, lead poisoning) the presence of an intra-cranial tumour, there are no localizing symptoms which enable the physician to determine in what part of the cranial cavity the tumour is situated. These cases constitute a not inconsiderable proportion of the whole. Many cases of this kind have come under my notice.

The most remarkable, and in many respects it is one of the most valuable and instructive cases of intra-cranial tumour which has been published, is the following:—

A girl, aged 20, was admitted to the Newcastle Infirmary on 5th January 1877, complaining of headache, vomiting, and giddiness. Her present illness had commenced, three years previously, with headache. For eight months the headache had been severe, and she had occasionally vomited. She had never had a fit, but had once tumbled off her chair in consequence, she thought, of giddiness. There was no suspicion of syphilis. Sight was perfect, but the ophthalmoscope showed marked double optic neuritis. There was absolutely no trace of paralysis—in fact, no localizing symptoms of any kind whatever. An intra-cranial tumour was diagnosed, but its position was left entirely an open question. The patient improved for a time under full doses of iodide of potassium; but a month after her admission to the hospital she died in an epileptic fit.

On post-mortem examination an enormous tumour (a sarcoma) was found springing from the membranes on the right side of the brain. It measured from before backwards 3 inches; from above downwards 3 inches; and from without inwards 1½ inches. It had destroyed the whole posterior half of the inferior frontal convolution, the lower half of the ascending parietal convolution, the lower half of the ascending convolution, and the outer half of the island of Reil; and had invaded the superficial surface of the posterior half of the middle frontal convolution, the anterior half of the supra-marginal convolution, and the anterior half of the superior sphenoidal convolution. (See Figs. 1, 2, and 3).

This case is, so far as I know, unique; for no other case has been recorded in which there was such extensive destruction of the motor area of the cortex without paralysis; but it is by no means uncommon to meet with large tumours in the temporo-sphenoidal

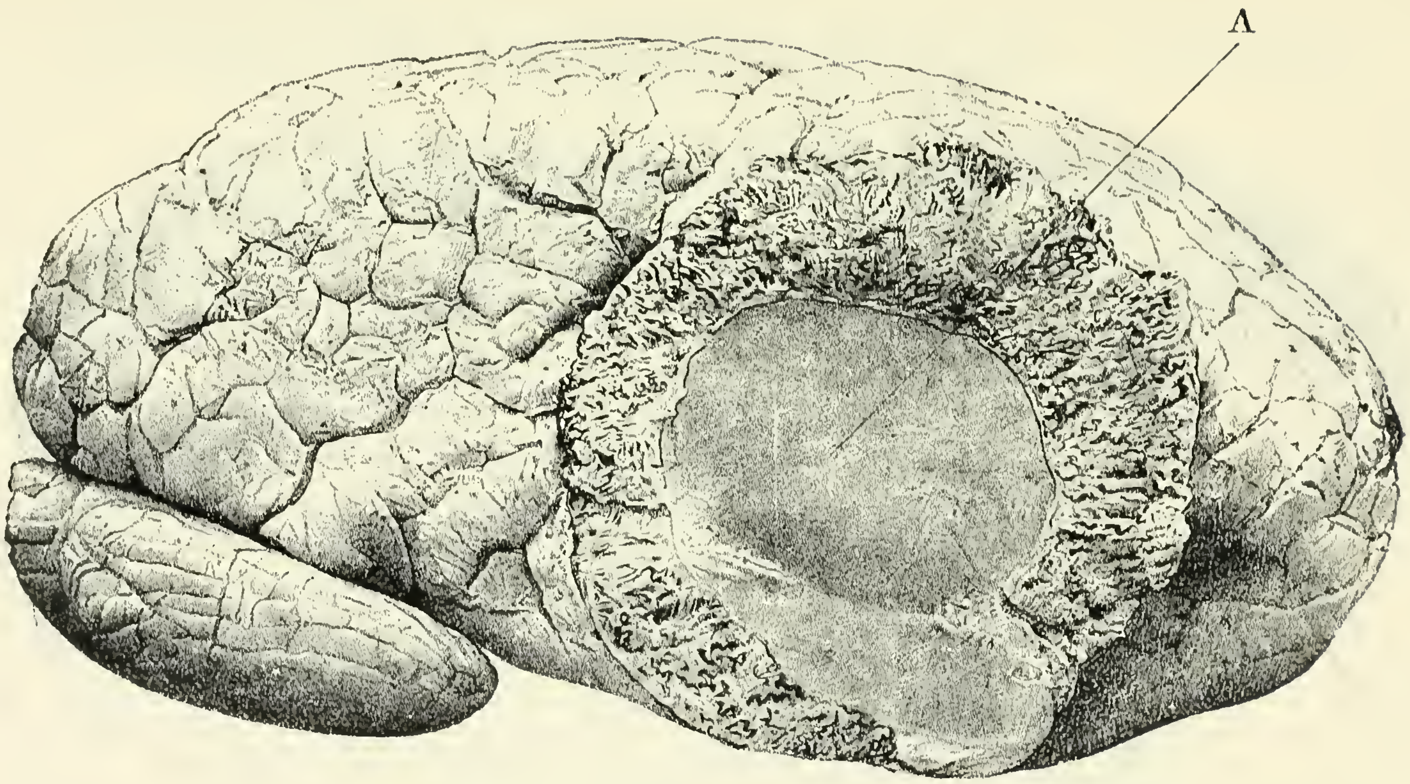

FIG. 1.—*The Outer Surface of the Right Hemisphere of the Brain in the case of M. D. (Large Sarcoma on the Surface which had produced Extensive Atrophy and Destruction of the Motor Area), showing the Tumour* in situ. (Copied from a Photograph, and somewhat reduced in size.)

The letter **A** points to the outer surface of the dura mater over the centre of the tumour.

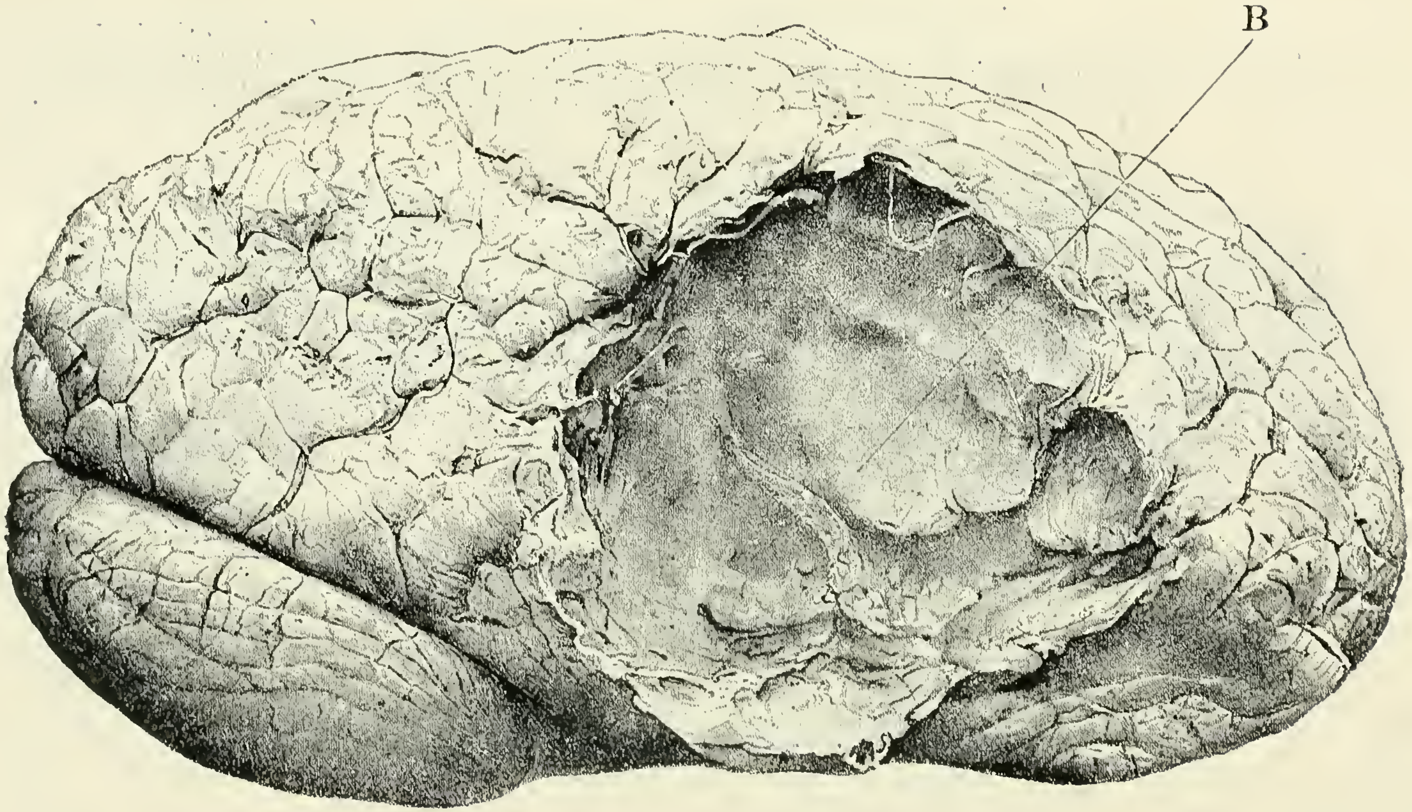

Fig. 2.—*The Outer Surface of the Right Hemisphere of the Brain in the case of M. D. (Large Sarcoma on the Surface which had produced Extensive Atrophy and Destruction of the Motor Area), showing the Brain after the Tumour was removed.* (Copied from a Photograph, and somewhat reduced in size.)

The letter B points to the extensive depression on the surface of the brain, into which the tumour filled.

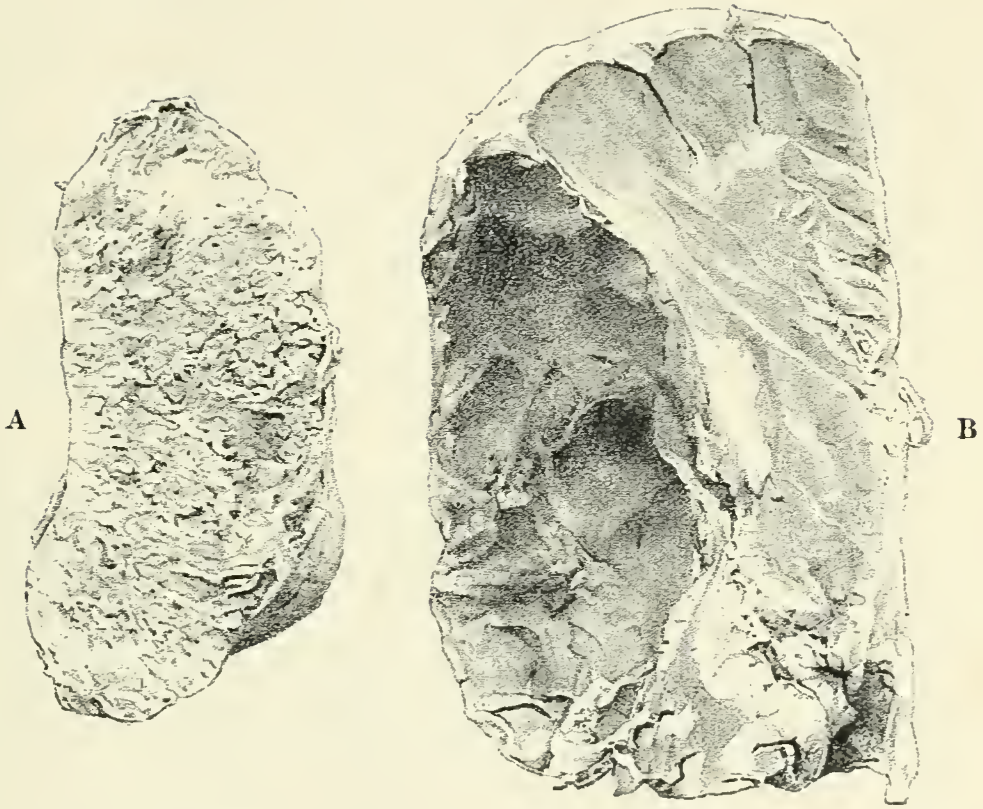

Fig. 3.—*Transverse Vertical Section through the Right Hemisphere of the Brain in the case of M. D. (Large Sarcoma on the Surface, which had produced Extensive Atrophy and Destruction of the Motor Area), showing the Tumour in Section and the Depression in the Brain Tissue (Atrophy and Destruction) produced by it.* (Copied from a Photograph, and somewhat reduced in size.)

The letter A points to the tumour ; B, is placed on the inner (left) side of the right hemisphere, which has been separated from the opposite (left) hemisphere by a section made from before backwards in the middle line.

and frontal lobes—the "silent areas" of the brain, as they are sometimes termed—which are unattended with any very definite and characteristic localizing symptoms. In the frontal lobes the tumour is not always so "silent" as this term would lead one to expect. The occipital lobe was formerly also thought to be a silent area; but it is now known that lesions in this situation produce homonymous hemianopsia, a most important localizing symptom. The necessity of examining the fields of vision in all cases of intra-cranial tumour in which the position of the tumour seems doubtful, cannot be too strongly insisted upon.

In the third place, in a few cases in which there are localizing symptoms, the symptoms give an erroneous impression as to the position of the tumour. These false or so-called pseudo-localizing symptoms are not, in my experience, common; they only occur, I think, in a comparatively small proportion of cases, but in the cases in which they do occur they lead to an entirely erroneous idea of the position of the tumour. In this connexion I may refer to a case which was mentioned by Prof. Grainger Stewart at the last meeting,—the case which was operated upon by Mr Alexis Thomson on Dr Gibson's suggestion. The details are as follows:—

An old soldier, aged 50, gate-keeper at Holyrood, was sent to me at the Infirmary by Dr W. J. White, complaining of pain in the head, numbness and stiffness in the left leg, and occasional spasmodic contractions beginning in the big toe of the left foot. He stated that the pain was worse at night, and that the spasms in the big toe occurred several times a day. He had had syphilis.

On examination, the skull was found to be markedly tender on percussion over the upper part of the motor area on the right side; the area of tenderness corresponded exactly to the situation of the leg centre and upper part of the arm centre. The knee-jerk was distinctly exaggerated on the left side. The optic discs were slightly ill-defined, but there was no very definite neuritis. There was no swelling or alteration of the scalp at the seat of the pain. Twenty grains of iodide of potassium were ordered three times a day. After taking the medicine for a week, the patient returned to say that the pain in the head was very much better, and that the leg felt stronger. He was seen two or three times after this date, at intervals of a week or a fortnight, and on each occasion he said that he was improving. When last seen, he expressed himself as being quite well; the pain in the head had entirely disappeared, but slight tenderness on percussion with the hammer could still be elicited. He had been free from spasms for a considerable time. The left leg, he said, now felt quite as strong as the right. He was strongly advised to continue the iodide.

I heard nothing more of him until one day, as I was going into the Infirmary, I happened to meet Mr Alexis Thomson, who told me that there was an interesting tumour of the brain to be seen in the post-mortem room. At the moment I did not think much about it, but after getting through my work in the wards, I looked into the post-mortem room as I was passing out of the Infirmary. I there met Dr W. J. White and Dr Leith; and I then learned that the tumour belonged to my patient the old soldier. Dr White then told me that some weeks after I had last seen the patient, the symptoms returned, and were not relieved by the continued administration of the iodide. Knowing that I had no male beds in the Infirmary, he had consequently sent the patient into Prof. Grainger Stewart's Ward. It was in this way that the case came under the care of Dr Gibson, who was not, I understand, made acquainted with the fact that I had previously been treating the patient.

I may say, in passing, that I entirely agree with Dr Gibson and Mr Alexis Thomson in thinking that, as the iodide had failed, operative procedure was called for in this case. I am further entirely at one with them in thinking that the local pain and tenderness, and the localized character of the spasms, which commenced in the big toe, clearly indicated that the tumour would in all probability be found on the cortex in the region of the foot centre.

The case shows that localized tenderness on the surface of the skull is not always indicative of a superficial lesion, and that in rare cases we may be entirely misled as to the position of a tumour by the pseudo-localizing symptoms which are present.

In this case no lesion of the bones, membranes, or cortex of the brain was found post-mortem; and the tumour was not, as I had supposed, syphilitic in nature. It proved to be a glioma involving the right optic thalamus; the tumour had encroached upon the posterior division of the internal capsule, apparently implicating the fibres belonging to the left leg. In this case the syphilitic nature of the tumour seemed quite clear during life, for the patient had suffered from constitutional syphilis; the symptoms undoubtedly pointed to a cortical lesion of an irritative character, and a syphilitic gumma is the most frequent cortical tumour of this kind; and the symptoms were for a time entirely relieved by anti-syphilitic treatment,—*i.e.*, full doses of iodide of potassium.

In the fourth place, in many of the cases in which the exact position of the tumour is clearly demonstrated by definite and distinct localizing symptoms, successful operative procedure is impossible or uncalled for.

(*a*.) In some of these cases the position of the tumour precludes operative interference. Tumours which are situated at the base, and tumours which involve the medulla oblongata, the pons Varolii, the basal ganglia, the deeper parts of the centrum ovale, and the corpus callosum, are obviously unsuited for operative interference.

Under this head I am disposed to include a large proportion of the cases in which the tumour is situated in the cerebellum. The surgeon can hardly hope to successfully remove tumours which involve the middle lobe of the cerebellum. Tumours which are situated in the lateral lobes are with difficulty reached, and the operation required for their removal is a dangerous one; the surgeon has to work in a very narrow space, and there is a risk of wounding the large venous sinuses and the medulla oblongata, the pons Varolii, etc. Further, it is often an extremely difficult or impossible thing to determine during life in which lateral lobe of the cerebellum the tumour is situated. For these reasons I am disposed to think that, in the present position of our knowledge, there are few cases in which a cerebellar tumour can be satisfactorily removed by operative procedure.

(*b.*) In other cases the tumour is so extensive, and infiltrates such a large area of brain tissue, that its complete removal is impossible. I have examined many gliomatous tumours of this kind after death. Of course, in many cases of this description, it is impossible to determine the exact extent and position of the tumour until the parts are exposed during the operation.

(*c.*) In other cases the tumour is (judging from the symptoms during life) multiple; and in some of the cases in which a tumour can be removed by operation, the presence of tumours which were not suspected in other parts of the brain necessarily renders the operation unsuccessful.

(*d.*) In other cases the tumour is of a malignant character. It is obvious that secondary deposits of cancer or sarcoma in the brain are not suitable for operative interference.

(*e.*) In some cases the cerebral tumour is complicated by associated lesions in other organs which contra-indicate any operative interference. In not a few cases, for example, of scrofulous tumour of the cerebellum, tubercles are also present in the lungs. In some syphilitic cases, the vessels either of the brain or in other parts of the body are so extensively diseased that an operation is very hazardous.

(*f.*) In other cases the symptoms are relieved by treatment, and an operation is thereby rendered unnecessary. Syphilitic tumours constitute the great majority of the cases which are included under this head; and it is important to note that in a considerable proportion of the cases of intra-cranial tumour in which the new growth is best fitted for surgical interference—in which very definite localizing symptoms, such as attacks of Jacksonian epilepsy, are present, and in which the tumour is situated on the surface of the motor area, in which, therefore, it can be exactly localized and easily and safely reached—the new growth is syphilitic, and therefore more or less amenable to treatment.

In some of the syphilitic cases very brilliant results may be obtained by active drug treatment. This statement especially applies to cases which are seen at an early stage of their development. But of late years I have become more and more impressed with the belief that, although many gummatous lesions are materially benefited, and some completely cured, by anti-syphilitic treatment, the cure is often incomplete unless the case is seen and actively treated at an early stage. In syphilitic cases, a scar or cicatrix often remains after treatment on the surface of the brain, gluing the membranes to the cortex, and passing for some distance into the cerebral tissue. This scar is often an "irritative lesion," the source of chronic epilepsy, and, it may be, of ultimate dementia and insanity. I am disposed to think that in cases of this kind operative procedure should be much more frequently advised than is at present the case. The interesting case to which Mr Berry referred at the last meeting seems to me a case in point. The details are as follows:—

Some years ago, a gentleman, aged 46, was sent to me by Mr Berry, suffering from epilepsy and right-sided homonymous hemianopsia. He had had constitutional syphilis, and, several years before I saw him, had suffered from violent headache and other symptoms indicative of a "coarse" cerebral lesion. The epileptic fits, which occurred at irregular intervals, were not preceded by any very definite aura. I was of opinion (and Mr Berry agreed with me) that there had in all probability been a gumma on the surface of the brain, possibly (because of the hemianopsia) in the region of the half vision centre; and that the scar which had resulted from this healed gumma was the source of the epilepsy. Under treatment the severity of the fits was for a time relieved, but the improvement produced by drug treatment was not marked. Under these circumstances I was strongly disposed to think that the patient should be trephined over the tip of the right occipital lobe on the chance of finding a cicatrix. A distinguished London neurologist who was subsequently consulted did not agree with this view. The operation was consequently not performed. The patient has continued to suffer from epilepsy, and his mental condition has now, I understand, become very greatly deteriorated.

While admitting the difficulty that there is in cases such as this in determining the exact position of the lesion—for hemianopsia may be due to a lesion in several different situations (cuneus, angular gyrus, optic tract at the base of the brain, for example)—I am still of opinion that an operation should in this case have been performed.

I repeat that I am disposed to think that in many of these syphilitic cases in which the gumma is of considerable size and of some standing—in which, in other words, a cicatrix must necessarily remain on the surface of the brain, even although the more urgent symptoms may be relieved by anti-syphilitic remedies—operative procedure is advisable, after the acute symptoms have subsided, under a vigorous course of iodide of potassium or iodide of potassium and mercury. I admit, of course, that in not a few cases of this kind the associated syphilitic disease of the cerebral vessels which is often present renders any operative procedure very doubtful. But the ultimate termination of many of these cases is so deplorable that some risk must be undertaken. I have seen several cases of syphilitic tumour in which, although the more urgent symptoms were relieved and remarkable improvement and apparent temporary cure resulted from drug treatment, the patients ultimately became useless members of society or insane, and had to be sent to an asylum. It is probable, I think, that in some of these cases operative interference might have been beneficial.

It is interesting to note that in two of the cases in which very large tumours have been successfully removed by the surgeon (I refer to Prof. Annandale's case and Dr Keen's case) the tumour developed as the result of an injury, and that the locality of the tumour was manifested during life by a cicatrix or depression on the surface of the skull.

These conclusions are not merely theoretical; they are based on a large clinical and pathological experience. In order to put the matter upon a definite basis so far as my own observation enables me to judge, I have taken the trouble to make an analysis of all the cases of cerebral tumour which I have had the opportunity of seeing during life, and which I have examined post-mortem.

Analysis of Cases seen during Life.—I have notes (in many cases very incomplete) of 10,115 cases of general medical disease seen either in hospital or in private practice. Amongst these there are eighty-two cases of intra-cranial tumour = ·8 per cent. (I have only included the cases in which the diagnosis seemed to me to be reasonably certain; I have omitted all—and they constitute, of course, a considerable number of cases—the doubtful cases.) This percentage does not, it must be remembered, represent the true proportion in which intra-cranial tumours occur in relationship to other diseases. I have had special opportunities of seeing cases of intra-cranial tumour, both in private and in hospital practice.

Analyzing these cases, I find that in one case a tumour was found post-mortem, the presence of which was not indicated by symptoms during life; in eighteen there were no localizing symptoms, or the localizing symptoms were insufficient to indicate the position of the tumour; in thirty-two cases (and I include in this category twelve cases of tumour of the cerebellum) the position or large extent (one case) of the tumour precluded successful operative interference; in one case the tumour was (judging from the clinical evidence, and this was verified post-mortem) multiple; in five the tumour was malignant (cancer or melanotic sarcoma) in character; in twenty cases the patients improved so markedly under treatment that operative interference was deemed unnecessary. The great majority of these were syphilitic cases. In four of them the subsequent course of events showed that an operation would perhaps have been advisable. Two of the four occurred nearly twenty years ago. In one of them the relapse which caused death was the result of a head injury.

The total result is, that in seventy-seven out of the eighty-two cases which I have seen during life, operative interference was (for one or other of the reasons mentioned above), in my opinion, contra-indicated when the patient was seen by me.

Of the five remaining cases, in two the success of an operation would, I think, have been extremely doubtful; in the three remaining cases an operation might (I think, looking back on the facts) have probably been attended with success.

Of the five cases in which an operation should, I think, have been performed, three were out-patients of the Edinburgh Royal

Infirmary; two of the three were only seen by me on one occasion one of them was admitted to the wards as an in-patient; in the third case, the diagnosis was by no means clear when I saw the patient, but the subsequent course of the case, which Dr Proudfoot of Kirkcaldy has kindly made me familiar with, seems to show that the case was one of tumour. The fourth has been published in my *Atlas of Clinical Medicine.* Looking back on the facts of that case, an operation ought, I think, to have been performed, but for several reasons, which I need not now specially mention, this seemed a doubtful proceeding at the time when I saw the patient. The fifth case was a clear case for operation,—not, however, when I saw the patient, for at that time the lesion was in a very early stage, and the diagnosis was attended with considerable uncertainty. In a sixth case, which was seen with Dr Struthers of Leith, and has been published in the *Edinburgh Medical Journal,* the question of operation was discussed, but rejected, partly because the diagnosis at the time of the consultation was by no means certain, and partly because of the peculiar mental disposition of the patient,—she would not hear of anything being done.

These conclusions will be more fully understood by reference to Table I.

From these statements it will be seen that the proportion of cases in which, judging from the clinical evidence, a tumour of the brain is likely to be successfully removed by surgical interference, is very small. It is possible that my experience may have been exceptional, and that I may have been unfortunate in meeting with such a small number of cases in which the tumour was capable of being removed successfully by the surgeon, but my figures are large; and my main conclusion seems entirely corroborated by the fact that Prof. Annandale, with his immense experience both in private and hospital practice, has only been able to bring one case before our notice, and that none of the other surgeons who have taken part in the discussion have been able to tell us of any successful cases. No doubt, if there had been any other successful cases we should have heard of them.

Further, this clinical experience is entirely corroborated by the pathological experience which I have gained from the examination of cases of intra-cranial tumour after death. Of the above eighty-two cases which I have observed during life, twenty-two were examined post-mortem. Further, during the time that I acted as pathologist either to the Newcastle Royal Infirmary or to the Edinburgh Royal Infirmary, I had the opportunity of examining twenty-eight cases of intra-cranial tumour which had died under the care of other physicians.

Of my own twenty-two cases, the successful removal of the tumour during life would, judging from the conditions found after death, have been impossible in seventeen; in the remaining five cases the tumour might probably have been successfully removed

TABLE I.—Cases of Intra-Cranial Tumour observed by Dr Byrom Bramwell during Life.

Number	Initials	Age	Sex	No. in Case-Book	Vol	Page	Symptoms: Localising	Diagnosis during life: Supposed seat of tumour	Supposed nature of tumour	Post-mortem: Seat of tumour	Nature of tumour	Summary of clinical facts contra-indicating or indicating operation	Associated	Where recorded	Remarks
1	H I	44	M	N	1	154	Incomplete double ptosis and paralysis both sides of face, some difficulty in swallowing	Base	Syphilitic (History of)	NOT FATAL		Base			
2	D S	41	M	N	1	178	Left hemiplegia and hemianaesthesia	Right hemisphere	Syphilitic (History of)	Cortical upper right parietal convolution	Syphilitic	Insufficient localising symptoms; 1 (if D)		Ed Med Journ	
3	H M	10	M	N C	2	128	Incomplete left hemiplegia. Incomplete paralysis both sides of face, marked mental symptoms. Cicatrix 3 inches above and slightly behind right ear	Right hemisphere ? Frontal lobe	?	Right frontal lobe	Glioma	Insufficient		Ed Med Journ	
4	[illegible]	24	M	N	4 7	60 112	Epileptic convulsion beginning right side of face and tongue, partial motor aphasia, partial right hemiplegia	Cortex left hemisphere, oral Broca's centre	Syphilitic (History of)	NOT FATAL				Ed Med Journ	
5	[illegible]	64	F	N	4	185	1 Redness of right disc	Not diagnosed		Subtentorial left membrane	Sarcoma	1 (if D before symptoms)	Miliary aneurism. Cerebral haemorrhage	Ed Med Journ	
6	J M	34	M	N	5 6	46 75	Left hemiplegia	Right hemisphere	Syphilitic (History of)	Posterior end 3rd right frontal convolution	Syphilitic		Injury. Relapse. Death	Ed Med Journ	
7	H W	19	F	N	6	38	Unilateral convulsions. Aura tip of middle finger of left hand. Marked affection of speech	Right hemisphere Cortex	? Syphilitic	NOT FATAL					
8	[illegible]	49	M	N	6	44	Double vision. Left hemiplegia. Cramps left leg	? Right hemisphere	Syphilitic	NOT FATAL					
9	[illegible]	37	M	N	6	110	None	?	Glioma	NO POST-MORTEM					
10	[illegible]	39	M	N	6	230	None	?	Syphilitic (12 years before)	NOT FATAL					
11	[illegible]	20	F	N	7	233	None	?	?	Right hemisphere Cortical	Sarcoma				
12	[illegible]	8	M	N	8	99	Internal strabismus of right eye. Left hemiplegia	Right hemisphere	Scrofulous	Various	Scrofulous	1 (6 tumours)	Tubercles in lungs		
13	[illegible]	18	M	N	8	108	Epileptic fit beginning in left hand [illegible] external	?	?	NOT FATAL					
14	A	9	F	N C	8	102	Pain back of head. Tonic spasms [illegible]	? Cerebellum	Scrofulous	Cerebellum	Scrofulous		Tubercles in lungs		
15	W M	35	M	N C	10	42	Paralysis right side of face and right 3rd nerve	Base	Syphilitic	NOT FATAL					
16	W H	5	M	N C	10	270	Reeling gait	Cerebellum or pons	Scrofulous	NOT FATAL IN HOSPITAL					
17	J D	34	M	Med Times and Gaz. 22nd Dec 1877			Cerebral symptoms developed late in the disease, and imperfectly [illegible]	?	Cancer	Secondary deposit cancer on surface of right ascending frontal and parietal convolutions	Cancer		Cancer in many organs of body		
18	H	6	M	D P L	1	28	Numbness in right hand, [illegible]; 1 (developed during treatment)	? Right hemisphere	? Scrofulous						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Pain back of head [illegible]	Base involving hypoglossal	? Syphilitic or [illegible]			Base			
20	M H	21	F	[illegible]	2	236	[illegible] left ophthalmoplegia, stupor [illegible] screaming fits	Top of pons	[illegible]						
21	A M	31	M	D P L	16	23	[illegible] back of neck and head [illegible] staggering gait, difficulty in swallowing, impaired sensation right hand, hyperaesthesia left side of face, loss of knee jerks	? Cerebellum and base	? Syphilitic						
22	J	11	F	D P L	17	27	Paralysis and rigidity of right arm and leg, paralysis of left 3rd nerve	Neighbourhood of left crus	Scrofulous	Left Crus and Cerebell	Scrofulous	Base			
23	[illegible]	44	M	D P L	18	79	Loss of power in left arm	Cortex right hemisphere	Syphilitic (20 years ago)						
24	J K	36	M	D P L	23	179	None	?	Syphilitic (13 years ago)						
25	W	64	M	D P L	20	167	Jacksonian epilepsy affecting right hand and face	Arm and face centre left hemisphere	Syphilitic (5 years previously)						
26	[illegible]	21	F	D P L	28	221		?	?						
27	[illegible]	19	M	D P L	31	57	Staggering [illegible] tendency to fall backwards [illegible] giddiness	Cerebellum	? Sarcoma, glioma, Scrofulous						
28	[illegible]	42	M	D P L	33	205	Motor aphasia [illegible] epileptiform attacks beginning in lips and tongue	Neighbourhood of Broca's convolution	?						
29	A	31	M	D P L	37	61	1 complete left eye; [illegible] knee jerk, pain back of head and right side	Left hemisphere	"	NO POST-MORTEM					
30	R M	15	M	D P L	37	197	Nothing definite. Tottering gait	? Cerebellum	Tubercular (Caries of Tibia and Family History)			Insuff			
31	H	35	M	D P L	41	129	Paralysis of right hand and right side of face [illegible] gradually; cramps in right hand, twitching [illegible]	Neighbourhood of right hand centre	"						
32	W	44	M	[illegible]	41	185	None	?	?						
33	[illegible]	6	M	[illegible]	43	137	[illegible] prominence of left eyeball	Vertex and left side	Sarcoma	Vertex on both sides of frontal bone	Small-celled sarcoma	Position contra-indicating operation; Base			
34	[illegible]	1	M	D P L	50	33	Paralysis of right hand [illegible] movements in right hand [illegible] paralysis of left 3rd nerve	[illegible] crus	Scrofulous			Insuff			
35	M	31	F	D P L	53	75	Staggering gait, twitching [illegible] left side of neck [illegible]	?	Syphilitic	NO POST-MORTEM		Insuff			
36	[illegible]	5	F	D P L	56	17	Loss of power in right arm and leg gradually developed. Knee jerks exaggerated	? Left hemisphere	Scrofulous						
37	[illegible]	5	M	D P L	57	3	Loss of power in right arm and leg, tremors in right arm and leg [illegible] double vision, enlargement of head, waddling gait	Cerebellum	Scrofulous	NO POST-MORTEM					
38	W	50	M	D P L	60	31	Epileptic convulsions beginning in left side of face and [illegible]	Right hemisphere	?	NO POST-MORTEM					
39	H	50	M	D P L	62	131	Tenderness on percussion over upper part of motor centres right side [illegible] jerk, spasms beginning in big toe left [illegible] weakness of left leg. Tenderness leg centre and spasm in big toe left foot	Cortical involving right leg centre	Syphilitic	Optic thalamus	Glioma				Operated upon by Dr Alex Thomson.
40	H	5	M	D P L	63	143	Paralysis and atrophy left side of tongue. Paralysis and rigidity of right arm	Base left side medulla	Syphilitic because of ulcer on mother's arm						
41	[illegible]	30	M	[illegible]	63	149	Pain left temple, epileptiform attacks affecting speech muscles, aphasia, word blindness and agraphia	Region of speech centres left side	? Syphilitic	NO POST-MORTEM		1 Improved remarkably for time under treatment, ultimate relapse and death			
42	[illegible]	18	M	[illegible]	64	107	Paralysis of both external recti, staggering gait, falls to right, deaf right ear [illegible] right knee jerk	[illegible]	? Scrofulous						
43	[illegible]	37	F	D P L	6	133	Pain back of head. Loss of knee jerks	? Cerebellum	? Scrofulous						Complete recovery after three months of KI. Quite well nine months after discharge from hospital.

TABLE I.—continued.

NUMBER	INITIALS	AGE	SEX	No. in CASE-BOOK	Vol.	Page	SYMPTOMS: General: Headache	Vomiting	Giddiness	General Convulsions Fit (epileptic, tonic, apoplectic)	Ophthalmoscopic Appearances: Optic neuritis, or post-neuritic atrophy	Engorged retinal veins	Primary optic atrophy	Localising	Pseudo-Localising as shown by Post-Mortem	DIAGNOSIS DURING LIFE: Supposed Seat of Tumour	Supposed Nature of Tumour	RESULT: F.	R.	?	POST-MORTEM: Diagnosis verified	Diagnosis unverified	Seat of Tumour	Nature of Tumour	Single	Multiple	Primary	Secondary	SUMMARY OF CLINICAL FACTS CONTRA-INDICATING OR INDICATING OPERATION—Operation Contra-indicated because of—: Tumour found P.-M., but no distinct symptoms of during life	No or insufficient localizing symptoms	Position of Tumour rendering operation impossible, or so hazardous that contra-indicated: Pons, Medulla, Base of Brain, Basal Ganglia, Deep Central Ovale, Corpus callosum	Cerebellum	Large Extent of Tumour	Multiple	Malignant	Improved under Treatment, but	ultimate Relapse	Operation Indicated	Successful Operation as shown by Post-M. was—: Impossible	Possible but not probable	Could have been performed if localised; but	no localising symptoms	Assumed Pathological [illegible]	WHERE RECORDED.	REMARKS
44	B. H.	27	F	*Ad.*	11	104								Bilateral temporal hemianopsia. Headache. Symptoms of acromegaly		Pituitary body	Enlargement of pituitary body			[illegible]											Base								1						
45	M. A.	23	F	*Atlas*	11	115	1		1					Slight bilateral temporal hemianopsia. Symptoms of acromegaly and giantism		Pituitary body	Enlargement of pituitary body	Improvement													Base								1						
46	I. M.	34	F	I. P. F.	7	125	1	1	1					Bilateral temporal hemianopsia, and complete loss of vision left eye. Polyuria.		Anterior fossa, region of pituitary body	Syphilitic		1																	1									
47	I. M.	24	M	P.	1	2	1	1	1	1	1			Staggering gait. pain right occipital region. clonic spasms of right arm and leg		Cerebellum	Glioma	1			1		Cerebellum middle & right lateral lobes.	Glio-sarcoma & large cyst								1							1 (Middle lobe of cerebellum)						
48	M. P.		F	P.	1	17			Hysterical fit					Paralysis of legs. Impairment of mental faculties. Convulsive twitchings of cephalic extremity		?	Cancer																		1										Breast removed for cancer eight days before seen
49	A. A.	38	F	P. (*Ed. Med. J.* [illegible])	1	99	1	1						Clonic tremor left arm. Exaggeration of knee jerk and ankle clonus left side. Tenderness left side of head. Reeling gait		?	?													Insuff.								? 1							
50	D. H.	11	M	P.	1	121	1			1	1			None		?	?		1													1													
51	A. M.	37	F	P.	1	170	1	1		Pseudo-apoplectic attacks	1			Left sided headache. slight loss of power and coarse tremor in right arm and leg. loss of power of attention. tenderness of head. fall to right side. vacant expression. aphasic symptoms	Headache area great occipital nerve, temporary left facial paralysis (D. F.). Difficulty swallowing. Diminution knee jerk right (paralysed) side	? Left frontal lobe and ? pons	? Glioma	1			1		Left frontal lobe and adjacent part of right frontal lobe	Glioma with haemorrhages and cyst						Insuff.									1 (Excision alone)						
52	[illegible]	64	M	P.	1	171	1		1					Pain back of neck. tenderness occipital region, especially right side. right-sided homonymous hemianopsia. mental derangement. Paralysis of right arm		Left occipital lobe	? Glioma	1					NO POST-MORTEM																						Paralysis of right arm just before death
53	[illegible]	50	M	P.	2	63	1	1	1		1			None		?	Syphilitic	1					NO POST-MORTEM							1															
54	[illegible]	24	M	P.	3	189	1	1	1		1			Reeling gait, numbness right side of face. Loss of taste left side of tongue		Cerebellum ? pons	Glioma or sarcoma	1			1		Cerebellum	Glio-sarcoma								1							?						
55	[illegible]	60	M	[illegible]	3	229		1	1		1 (Not when seen by D. B.)			Loss of power right leg. Spasms in [illegible] right [illegible] after-developments		Left motor area leg centre	? Glioma						NO POST-MORTEM																1 (Not localising symptoms insufficient)							
56	[illegible]	35	M	P.	4	127	1	1	1	1	1 m.			Word blindness, agraphia. inability to concentrate. right hemiplegia		Left hemisphere in region of angular gyrus	Glioma	1					NO POST-MORTEM										Operation impossible													Prof. Macewen refused to operate
57	[illegible]	17	[illegible]	[illegible]	4	216	1	1	1		1 m.			Pain back of head. marked giddiness. staggering gait tendency to fall to the left		Cerebellum	Glioma or tuberculous	1			1		Cerebellum	Glioma								1							? 1						
58	P. H.	46	M	[illegible]	5	7	1		1		1 m.			Ophthalmoplegia. tendency to fall to the right. difficulty in swallowing. paralysis of palate		Pons or base far back	Sarcoma or glioma	1					NO POST-MORTEM								Base														Prof. Macewen refused to operate
59	[illegible]	17	M	[illegible]	5	46	1	1	1 ?		1 m.			Reeling gait. Diminished knee jerks especially left leg	Headache left parietal region	Cerebellum	Scrofulous	1					NO POST-MORTEM									1													
60	A. [illegible]	51	[illegible]	[illegible]	6	123	1		[illegible]		1			Loss of power both arms and both legs. loss of sensibility left side of face. [illegible] Neuralgia area of [illegible]		Base pressing on pons	? Fibroma or osteoma	1			1		Left side of base pressing on pons, auditory and 5th nerves								Base								1						
61	Mrs A.	61	F				1	1	1	Epileptic fit	1			Reeling gait. intense vertigo. semi-[illegible] paralysis		Cerebellum	Cancer	1			1		(1) Right lobe of cerebellum (2) Left lenticular nucleus (3) Right ascending parietal convolution	Cancer											1				1						Cancer of breast removed eight months previously
62	[illegible]	32	F	*Ed. Med. J.* [illegible]			1	1	1		1 m.			[illegible] paralysis [illegible] right [illegible] afterwards		Tip left occipital lobe and probably elsewhere	Melanotic sarcoma	1			1		Various, one nodule tip of left occipital lobe												1				1						Melanotic sarcoma removed five years previously
63	[illegible]	55	M	P.			1		1					[illegible]		Left face centre cortex	Syphilitic		1																	1									
64	M. [illegible]	21	[illegible]	[illegible]	14	131	1	1	1	Pseudo-apoplexy			1	[illegible] hemianopsia [illegible]		Pituitary body	? Sarcoma or hypertrophy	1			1		Pituitary body	Sarcoma							Pituitary body								1						
65	M. [illegible]	35	[illegible]		17	135	1 ?		1		1 ?			[illegible]		Region of crus	? Fibroma						STILL LIVING								Base														
66	[illegible]	33	M	P.	17	172	1	1	1	Epileptic convulsions				Paralysis [illegible]		Base and cortex left facial centre	Syphilitic	1					NO POST-MORTEM								Base								1						
67	[illegible]	[illegible]	M	[illegible]	19	53	1							[illegible] paralysis [illegible]		Right [illegible]	Scrofulous	1					NO POST-MORTEM								Base														
68	M. H.	11	[illegible]	[illegible]	19	90	1	1	1		1			Paralysis [illegible] staggering [illegible] diminished		Base ? pons	? Tubercular	1					NO POST-MORTEM								Base														
69	M. [illegible]	29	[illegible]	P.	19	107	1	1	1		1			None		Base	?		1												Base														
70	M. [illegible]	27	M	[illegible]	20	15	1	1	1		1			[illegible]		[illegible]	Syphilitic						STILL LIVING													1	1								
71	[illegible]	7	[illegible]	[illegible]	20	71	1	1		[illegible]	1			[illegible]		Cerebellum	Scrofulous	1					NO POST-MORTEM									1													
72	[illegible]	20	M	[illegible]	22	63	1	1			1			[illegible]		?	?			[illegible]										1															
73	[illegible]	33	[illegible]	[illegible]	24	190	1						[illegible]	[illegible]		?		1					Left frontal lobe	Glio-sarcoma						1									1						
74	[illegible]	31	[illegible]	[illegible]	28	89	1	1		1				[illegible] head right		[illegible]	? Sarcoma, fibroma, or osteoma	1			1		Right side of pons	Glio-sarcoma							Base														
75	[illegible]	8	M	[illegible]	29	53	1	1	[illegible] attacks	1				[illegible]		[illegible]	? Vascular glioma	1					NO POST-MORTEM								Pons		1												
76	[illegible]	9	[illegible]	[illegible]	29	77	1	1			1			[illegible]		[illegible]	Scrofulous	1					NO POST-MORTEM									1													
77	[illegible]	23	M	[illegible]	29	167	1		1				1	[illegible]		[illegible]	Syphilitic		1				RELIEVED BY TREATMENT								Base														
78	[illegible]	44	M	[illegible]	30	163	1	1	1		1			[illegible]		[illegible]	Syphilitic [illegible]		1																	1									
79	[illegible]	40	M	[illegible]	31	185	1		1		1			[illegible]		[illegible]	[illegible] glioma				1		Right side of pons growing on [illegible]								[illegible]								1						
80	M. [illegible]	33	[illegible]	[illegible]	33	225	1	1			1			[illegible]			[illegible]	1					NO POST-MORTEM												1										Epitheliomatous tumour of breast removed some months before
81	[illegible]	27	M	[illegible]	37	231	1	1	1		1			[illegible]		[illegible]	Syphilitic [illegible]						PARTIAL RECOVERY													1									
82	[illegible]	67	M		39	27	1		1		1			[illegible]		[illegible]	[illegible]						STILL LIVING							1															

Cases under Dr Bramwell's care during Life in the Edinburgh Royal Infirmary, and Examined by him Post-Mortem.

						No. in Table I.	Seat of Tumour.									
1	A. M.	4	M.	O.P. 43	E. 137	33	Intra- and extra-cerebral.	Sarcoma.	1	...	1	...	1	...	...	...
2	J. G.	1½	F.	O.P. ...	E. ...	22	Crus.	Scrofulous.	1	...	1	...	1	...	...	...
3	R. G.	...	M.	O.P. 62	E. 131	39	Optic thalamus.	Glioma.	1	...	1	...	1	...	...	

Cases in Private Practice under Dr Bramwell's care during Life, and Examined by him Post-Mortem.

						No. in Table I.	Seat of Tumour.									
1	J. M.	24	M.	P. 1	2	47	Cerebellum middle and left lateral lobes.	Glioma.	1	...	1	...	1	...	...	..
2	A. M.	47	F.	1	170	51	Frontal lobe.	Glioma.	1	...	1	..	...	?1	...	......
3	A. L.	17	F.	4	215	57	Cerebellum.	Glioma.	1	...	1	...	1	...	...	......
4	A. G.	51	F.	5	123	60	Cerebellum and medulla.	? Glioma.	1	...	1	...	1	...	...	......
5	M. P.	21	F.	14	121	64	Pituitary body.	Sarcoma.	1	...	1	...	1	...	...	......
6	A. K.	34	F.	28	69	74	Pons.	Glioma.	1	...	1	...	1	...	...	......
7	J. M'D.	52	M.	24	169	73	Frontal lobe. (Immense.)	Glio-sarcoma.	1	...	1	...	1	...	...	......
8	J. G.	40	M.	31	195	79	Base. Pons.	? Sarcoma.	1	...	1	...	1	...	...	......
9	Mrs A.	61	F.	10	503	61	Cerebellum and lenticular nucleus.	Cancer.	...	1	...	1	1	...	...	......
10	M. P.	...	F.	...	...	48	Cortex. Vertex.	Cancer.	...	1	...	1	1	...	...	......
11	S. E. M.	32	F.	*Ed.*	*Med. Journal.*	62	Many positions.	Melanotic sarcoma.	...	1	...	1	1	...	...	......

TABLE II.—Cases of Intra-Cranial Tumour observed by Dr Byrom Bramwell after Death.

Cases Examined Post-Mortem by Dr Bramwell in the Newcastle Infirmary, but not seen by him during Life.

No.	Initials.	Age	Sex	Vol.	Page.	Seat of Tumour.	Nature of Tumour.	Single.	Multiple.	Primary.	Secondary.	Successful Operation.			Associated Pathological Conditions which would have rendered Operation Unsuccessful.
												Impossible.	Possible but improbable.	Possible and advisable.	
1	P. T.	47	M.	No.	5	Both hemispheres.	Lympho-sarcoma.	.	1		1	1	...	...	Intra-thoracic tumour; secondary deposits liver, kidney, supra-renal capsules.
2	J. H.	33	F.	,,	68	Cortex ascending frontal, and left optic thalamus.	Syphilitic.		1		? 1	1	...	...	Other organs healthy.
3	J. F.	31	M	,,	70	Right frontal lobe and orbit, base.	Sarcoma.	1	...	1	..	1 Operation attempted.	...	...	Permission limited to head.
4	W. R.	46	M.	,,	94	Base, in region of chiasma.	Syphilitic.	1	.		1	1	...	...	Gumma in each testes, and abscesses in kidney.
5	E. G.	25	F.	,,	111	Pons and corpus striata.	? Glioma sarcoma.	...	1	1	.	1		..	Healthy.

Cases Examined Post-Mortem by Dr Bramwell in the Edinburgh Royal Infirmary, but not seen by him during Life.

No.	Initials.	Age	Sex	Vol.	Page.	Seat of Tumour.	Nature of Tumour.	Single.	Multiple.	Primary.	Secondary.	Impossible.	Possible but improbable.	Possible and advisable.	Associated Pathological Conditions which would have rendered Operation Unsuccessful.
1	E. Y.	61	F.	31	220	Left frontal lobe. Left optic thalamus. Right orbit.	Glioma and cyst.	...	1	1	..	1	..	...	Permission limited to head.
2	L. M'P.	45	F.	31	233	Left temporo-sphenoidal lobe.	Glioma.	1	...			1 Tumour very large.	...	...	Permission limited to head. Dr A. Bruce, 'Brain,' vol. vi., p. 239.
3	J. M.	7½	M.	31	304	Cerebellum.	Scrofulous.	...	1	...	1	1 Both left lobes.	...	...	(Caries of foot.)
4	M. G.	11	F.	31	316	Cerebellum.	Scrofulous.	1			1	1	...	...	(Caseous bronchial gland.)
5	J. M.	18	F.	32	32	Pons and cerebellum.	Scrofulous.	..	1			1	...	...	Tubercle lungs and Bright's disease
6	A. G.	29	F.	32	52	Cerebellum.	? Scrofulous.	1	...	?	...	1 No symptoms.	...	...	Died of (?) typhus fever.
7	R. S.	26	M.	32	86	4th ventricle.	? Scrofulous.	1	..		1	1	..	...	Advanced phthisis.
8	H. C.	43	F.	32	129	Cerebellum.	Scrofulous.	1	..	...		1 Middle lobe.	...	...	Miliary tubercles lungs.
9	A. H.	53	F.	32	177	Cerebral hemispheres.	Sarcoma.	...	1	...	1	1	..	...	Sarcoma rib; secondary deposits bronchial glands, liver, etc.
10	H. H.	21	F.	32	189	Cerebral hemispheres, etc.	Melanotic sarcoma.	.	1		1	1	...	...	Melanotic deposits almost every organ of body and skin.
11	J. M.	47	M.	32	221	Centre of left occipital lobe.	Syphilitic.	1	..	...	.	...	1	...	Scar penis; other organs healthy.
12	R. S.	37	M.	32	252	Whole of right centrum ovale; corpus callosum and crus.	Glioma.	1	...	1	...	1	...	...	Permission limited to head.
13	J. M.	6	M.	32	266	Pons and cerebellum.	Scrofulous.	..	1		...	1	...	..	Permission limited to head.
14	J. S.	42	M.	32	271	Left frontal lobe; centrum ovale; corpus callosum; pons.	Glioma.	...	1	1	...	1	...	.	......
15	J. W.	32	M.	32	278	Centrum ovale of right hemisphere (orange).	Glioma.	1	...	1	..	1			Extensive aortic disease; hæmorrhages (? commencing tumours) in pons.
16	J. D.	42	M.	32	293	Two-thirds of left centrum ovale, cortex, membranes, cerebellum	Cancer.		1	..	1	1		...	Cancer glands of neck.
17	J. A.	12	M.	32	298	Cerebellum (middle and left lateral lobe).	Scrofulous.	1	..		? 1	1	..	.	Permission limited to head.
18	A. R.	4	M.	32	332	Cerebellum, right lateral lobe.	Scrofulous.	1	.		? 1	1	..	..	Permission limited to head.
19	J. M'G	22	M.	33	130	Middle fossa base and right temporo-sphenoidal lobe.	Sarcoma.	1	.	1		1	...	...	Permission limited to head.
20	W. C.	23	M.	33	182	Pituitary body.	Sarcoma.	1		1		1	...	...	......
21	M.T.R.	49	F.	33	193	Left temporo-sphenoidal lobe. (Very large.)	Glio-sarcoma.	1		1		1	..	...	Cirrhotic kidneys.
23	P. G.	44	M.	33	205	Left temporo-sphenoidal and adjacent parts of frontal and parietal, and small tumour in right ascending parietal.	Glioma.		1	1	...	1 Operation attempted.	.	...	No permission to examine.
23	S. M.	27	F.	33	206	Surface of whole of right and top of left frontal lobes.	Syphilitic.	.	.	...	...	1		...	Waxy disease spleen, liver, intestine, and kidney.

Cases under Dr Bramwell's care during Life in the Newcastle Infirmary, and Examined by him Post-Mortem.

No.	Initials.	Age	Sex	Vol.	Page.	Seat of Tumour.	Nature of Tumour.	Single.	Multiple.	Primary.	Secondary.	Impossible.	Possible but improbable.	Possible and advisable.	Associated Pathological Conditions which would have rendered Operation Unsuccessful.
1	R. S.	41	M.	1	178	Cortical; right upper parietal convolution.	Syphilitic.	1		...	? 1			1 If D.	
2	D. M.	40	M.	2	128	Right frontal lobe.	Glioma and cyst.	1		1		1	...	.	Very extensive; operation for relief of pressure indicated.
3	A. C.	64	F.	4	185	Subtentorial	Sarcoma.	1		1			? 1 Not D.		Cerebral hæmorrhage.
4	J. M.	34	M.	5 8	46 75	Posterior end of 2nd left frontal convolutions.	Syphilitic.	1	.	1		...	..	1	But relieved by treatment; recurrence of head symptoms after a fall.
5	M.A.D.	20	F.	7	283	Right hemisphere (Enormous.)	Sarcoma.	1		1		...	? 1 Not D.	..	......
6	J. W.	5	M.	8	99	Six tumours, various parts.	Scrofulous.		1	.	1	1	..		Tubercle lungs.
7	A. C.	9	F.	9	102	Cerebellum.	Scrofulous.	1	...		1	1	...	...	Tubercle lungs.
8	J. B.	34	M.	*Medical Times,* 22/12/77		Right ascending frontal and parietal convolutions.	Cancer.		1		1	1	.	...	Meningitis; with diffusion of cancer in other organs of body.

Cases under Dr Bramwell's care during Life in the Edinburgh Royal Infirmary, and Examined by him Post-Mortem.

No.	Initials.	Age	Sex	Vol.	Page.	No in Table I	Seat of Tumour.	Nature of Tumour.	Single.	Multiple.	Primary.	Secondary.	Impossible.	Possible but improbable.	Possible and advisable.	Associated Pathological Conditions which would have rendered Operation Unsuccessful.
1	A M	4	M.	O.P.E. 43	137	33	Intra- and extra-cerebral.	Sarcoma.	1		1		1			
2	J. G.	1½	F.	O.P E		22	Crus.	Scrofulous.	1		1		1			
3	H. G.		M.	O.P.E. 62	131	39	Optic thalamus	Glioma.	1		1		1			

Cases in Private Practice under Dr Bramwell's care during Life, and Examined by him Post-Mortem

No.	Initials.	Age	Sex	Vol.	Page.	No in Table I	Seat of Tumour.	Nature of Tumour.	Single.	Multiple.	Primary.	Secondary.	Impossible.	Possible but improbable.	Possible and advisable.	Associated Pathological Conditions which would have rendered Operation Unsuccessful.
1	J. M	24	M.	P 1	2	47	Cerebellum middle and left lateral lobes.	Glioma.	1		1		1			
2	A M.	47	F	1	170	51	Frontal lobe.	Glioma.	1		1					
3	A L.	17	F	4	215	57	Cerebellum.	Glioma.	1		1			? 1		
4	A G.	51	F.	5	123	60	Cerebellum and medulla.	? Glioma.	1		1		1			
5	M. P	21	F	14	121	64	Pituitary body.	Sarcoma.	1		1		1			
6	A K	34	F.	23	69	74	Pons.	Glioma.	1	.	1		1			
7	J. M'D.	52	M	24	169	73	Frontal lobe (Immense.)	Glio-sarcoma.	1		1		1			
8	J. G.	40	M	31	195	79	Base. Pons.	? Sarcoma.	1		1		1	.		
9	Mrs A	61	F.	10	503	61	Cerebellum and lenticular nucleus.	Cancer.		1		1	1	..		
10	M P.		F.			48	Cortex. Vertex.	Cancer.		1		1	1			
11	S E. M.	33	F.	Ed. Med		62	Many positions.	Melanotic sarcoma		1		1	1			

had its position been diagnosed and an operation undertaken. But in three of these five cases operative interference was precluded by the fact that there were no localizing symptoms. In one the patient completely recovered for a time under treatment, the symptoms subsequently relapsing after a fall from a considerable height. In one the tumour was so extensive (involving as it did a large part of the frontal lobe and the adjacent part of the motor area) that an operation would in all probability have proved fatal.

Of the twenty-eight cases which were examined post-mortem, but which had been under the care of other physicians, there was only one in which, so far as I could judge from the post-mortem appearances, the removal of the tumour could have been successfully performed.

Of course, there is a fallacy in judging of the question of successful operative procedure by the pathological conditions which are found after death; for some tumours which at the time of death are so extensive as to preclude successful removal, may, in their early stages, have been limited, and therefore capable of being cut out. I doubt, however, whether this source of fallacy affects my figures in any material degree.

Further, it must be remembered that the post-mortem evidence is in one respect much less reliable than the clinical evidence in enabling one to form an opinion as to whether a tumour could have been successfully removed during life or not; for in some of the cases of intra-cranial tumour in which the post-mortem examination shows that an operation could have been successfully performed, the clinical evidence would have contra-indicated an operation. In some of these cases there are no localizing symptoms to indicate the position of the tumour during life.

The results of my pathological experience are more fully set forth in Table II.

As the result, then, of my whole experience, I have no hesitation in saying that it is only in a very small proportion of cases that an intra-cranial tumour can be successfully removed during life.

But although it would appear that there are comparatively few cases in which the surgeon can hope to successfully remove an intra-cranial tumour, I agree with Prof. Annandale in thinking that operative procedure—trephining the skull—as a palliative remedy is often desirable. In my work on *Tumours of the Brain*, which was published now some eight years ago, I advocated, but by no means so strongly as I would do to-day, the operation of trephining for the relief of symptoms in cases in which there is great increase of the intra-cranial pressure, and in which drug treatment (purgatives, large doses of iodide of potassium, etc.) has failed. When I published that work I was not aware that Prof. Grainger Stewart, or, indeed, anybody else, had advocated the operation of trephining as a purely palliative remedy. As I have just stated, I would now go further than I did eight years ago. I believe that there are many cases of intra-cranial tumour in which palliative trephining should be carried out. In not a few cases the headache is intense, and it has been conclusively shown that in some of these cases sudden death takes place, apparently as a result of the mere severity of the pain and sudden inhibition of the action of the heart. Dr Hughlings Jackson has directed attention to this point.

Again, in other cases in which the intra-cranial pressure is greatly increased, the patient dies either suddenly in an epileptic fit, or gradually as the result of failure of the respiration. Although, as Mr Duncan has just pointed out, it is by no means easy to establish a continuous drain of the cerebro-spinal fluid from a trephine opening, experience has, I think, conclusively shown that opening the dura mater does materially reduce the intra-cranial pressure, and does undoubtedly relieve the headache and other symptoms which in cases of this kind are the source of so much suffering to the patient, and which are so frequently the cause of death.

Further, it must be remembered that in a large proportion of the cases of intra-cranial tumour the optic neuritis is intense, and that in not a few of them the optic neuritis, if allowed to continue, passes on to optic atrophy, and produces more or less, and it may be complete, blindness. Now, it has been conclusively shown that in some cases in which the operation of trephining has been performed, both for tumour and abscess, the optic neuritis has speedily disappeared, in consequence, I believe, of the sudden relief of the increased intra-cranial pressure. I have always been of opinion that increased intra-cranial pressure is an important element in the production of the double optic neuritis which is associated with intra-cranial tumours. This view has been much disputed, and is rejected by most authorities. But I still maintain that increased intra-cranial pressure is a most important factor (I do not say that it is the only factor—see *Intra-cranial Tumours*, page 44, where I have discussed this point in full) in the production of the condition. The disappearance of the optic neuritis after the operation of trephining goes, I think, far to prove the correctness of this view. But the practical point which I would now urge is, that palliative trephining may prevent the development of post-neuritic atrophy and permanent blindness.

I may take this opportunity of saying, that in many cases of lead poisoning in which cerebral symptoms are prominent—cases of lead encephalopathy, as they are technically termed—trephining, with the object of relieving the optic neuritis and preventing post-neuritic atrophy, is also, I think, indicated. During the time that I practised in Newcastle I had frequent opportunities of seeing cases of this description. There are large white-lead manufactories at Gateshead, and severe cases of lead encephalopathy were frequently admitted to the Newcastle Infirmary. Some of these cases died; in many of the cases which recovered the eyesight was permanently damaged; in some so markedly damaged that the patient was practically useless through the blindness which was produced. Since coming to Edinburgh I have seen no cases of lead encephalopathy; but of late years I have come to the conclusion that the operation of trephining in some cases of this description for the prevention of post-neuritic atrophy and subsequent blindness is probably a justifiable and advisable procedure. Further, it is not at all improbable, I think, that in some cases of lead encephalopathy the operation may not only relieve the optic neuritis and prevent blindness, but that it may prevent death itself.

Again, Prof. Victor Horsley believes that in some cases the operation of trephining and the removal of a portion of a cerebral tumour produces a retarding influence upon the development and growth of the portion of tumour which remains. But whether this is so or not, the operation in many cases makes the life of the patient much more comfortable and bearable. I am of opinion, then, that in many cases of intra-cranial tumour in which the conditions seem to contra-indicate the successful removal of the tumour, the operation of trephining and opening the dura mater should be performed.

Further, it must be remembered, firstly, that the diagnosis as to the exact position and connexions, the size and pathological nature, of an intra-cranial tumour, is often a matter of much uncertainty during life; and, secondly, that in almost all cases in which the symptoms are not relieved, and rapidly relieved, by large doses of iodide of potassium, or iodide of potassium and mercury, the disease proves fatal, and often rapidly fatal. Under such circumstances, if the locality of the tumour can be even approximately determined (if, for example, it can be determined that it is situated in the right or left hemisphere), and if there is a reasonable probability that it can be safely reached, operative procedure is justifiable. Even although the surgeon does not think that the case is one in which the tumour is likely to be successfully removed, he is not, in my opinion, justified in refusing to operate if the patient or his friends desire him to do so. There are many desperate cases of this kind in which one may hesitate to urge and press an operation, but in which, if the patient desires an operation, he should be allowed the benefit of the doubt. In cases of this kind the decision should, I think, be left to the patient and his friends. The facts should be fully and fairly placed before them, and they should be left to decide whether the operation should be performed or not. It is always possible that the diagnosis as to the position and extent and pathological character of the growth may be mistaken. It is possible (though the reverse is much more likely to be the fact) that in some of the cases in which the clinical conditions seem to preclude successful removal it may be found possible, when the parts are exposed, to successfully remove the growth. Further, the operation does not materially add to the danger of the case. In fact, in many cases it materially relieves suffering, prevents blindness, and prolongs life. For all these reasons I am, after mature consideration, disposed to think that in many cases of intra-cranial tumour trephining ought to be performed; although I repeat that I am fully persuaded, both from my clinical and pathological experience, that the cases in which an intra-cranial tumour can be completely and successfully removed by the surgeon are, relatively speaking, very rare.

Let me now briefly refer to some of the other conditions which come under the care of the physician in which trephining is indicated.

Epilepsy.—In considering this question it is very advantageous to divide cases of epilepsy into the following groups:—

(*a.*) Cases of traumatic epilepsy in which there is a distinct scar or depression on the surface of the skull, and in which the epileptic discharge begins in the portion of brain tissue (grey matter) which is situated immediately under the seat of the external injury. In these cases the operation of trephining is clearly indicated. These are the cases of epilepsy in which the surgeon may expect to obtain the best results from operative interference. Under this head I may refer to a most instructive and interesting case of Jacksonian epilepsy due to the presence of a small spiculum of bone which pressed upon and irritated the centre for the platysma muscle. In that case there could be no question that an operation would have saved the life of the patient. Unfortunately, an operation was not performed. At the time when the case came under my notice, now nearly twenty years ago, surgeons were loth to open the cavity of the cranium. The question of operation was, as a matter of fact, considered at a consultation with one of the surgeons to the Newcastle Infirmary, but it was decided, as the patient was improving, to defer the operation for a time. Unfortunately, the patient died two days after the consultation. The case is published in the *British Medical Journal*, September 1, 1877.

In cases of this description the operation is most clearly indicated when the scar or depression is situated over the motor area in which the spasm commences, as it was in the case to which I have just referred. In those cases in which there is a scar or depression on the surface of the skull, and in which a general epileptic fit is preceded by an aura which does not consist of a localized spasm, but which is sensory in character, the operation is less likely to be successful; for, even although the aura (which is indicative of the commencing discharge) seems to have its starting-point in the portion of grey matter immediately below the seat of the injury, there are more sources of fallacy than when the first indication of the fit is a localized muscular contraction or spasm.

(*b.*) Cases of traumatic epilepsy in which a depression or scar is situated on the surface of the skull, and in which localized spasms or an aura of some kind or another, show that the epileptic discharge begins in a definite area of the brain cortex, the portion of grey matter which is first discharged does not correspond to (immediately underlie) the position of the external injury. In these cases the operation is much less likely to be successful; but when drug treatment has failed, operative treatment is, I think, called for. But the question arises whether the surgeon should trephine at the seat of injury represented by the external cicatrix or over the area of grey matter which is first discharged at the commencement of the fit. Whether the fit has its starting-point in some irritation below the scar or depression, can only be decided by actual observation. I am disposed to think that in cases of this description the surgeon should first trephine over the position of the scar or depression, and then, if no source of cortical irritation is found in that situation, that a second portion of bone should be removed over the area of grey matter which is first discharged in the fit.

(*c.*) Cases of traumatic epilepsy, in which a scar or depression represents the position of a former injury to the skull, but in which the epileptic fits begin with a general discharge, *i.e.*, without any localized spasm or definite aura. In these cases the trephined opening should, of course, be made at the seat of the injury. In cases of this kind the operation is an experimental one, and is rarely, perhaps, likely to be attended with success. In such cases, where no source of irritation is found beneath the external cicatrix, it is useless, I think, to proceed further; there are no indications to warrant the surgeon in making a second exploratory incision. A case of this kind, in which Mr Caird performed the operation, is fully reported in my *Clinical Studies*, page 331.

Under this head we should also include those cases of traumatic epilepsy in which there is a scar or depression on the surface, and in which general epileptic convulsions occur without any definite mode of commencement or warning, and preceded by an aura of an indefinite kind, such as a feeling of something rising from the stomach to the head,—a feeling of fear, palpitation, and the like.

(*d.*) Cases of idiopathic epilepsy, *the* disease epilepsy (and I exclude from this category cases in which the epileptic fits are the result of a "coarse" lesion, such as a tumour or abscess, and in which the epilepsy is symptomatic of such general conditions as Bright's disease, lead poisoning, and the like), in which the epileptic fits always commence with a localized spasm, or with a definite aura which is constant in character and which definitely indicates the position of the area or centre of grey matter which is first discharged. In these cases the operation of trephining should also be performed, provided that drug treatment has failed to give relief. In cases of this kind the mode of commencement of the spasm or the character of the aura is the guide to the position of the grey matter which is first discharged. The guide is far more certain in those cases in which the aura consists of a localized spasm than in the more numerous cases in which it consists of some sensory disturbance, such as a painful sensation in a localized part (say, the tip of the forefinger), a flash of light in the eyes, a bad smell in the nose, a bad taste in the mouth, etc. Dr Hughlings Jackson was, so far as I know, the first to point out that in cases of epilepsy in which the discharge invariably begins in the same localized area of grey matter, the affected portion of grey matter should be cut out,—provided, of course, that drug treatment has failed to give relief.

(*c*.) Cases of idiopathic epilepsy in which there is nothing to show that the epileptic discharge commences in a localized area of the brain,—*i.e.*, in which there is no localized spasm at the commencement, no definite aura, or in which the aura is of a general (non-localizing) character, such as an indescribable feeling in the stomach or elsewhere, a feeling of fear or the like. In these cases (and under this head may be included many cases in which the epileptic condition is said or thought to have resulted from a blow or fall on the head, but in which there is no external evidence, in the form of a cicatrix, of the injury) the results of operative interference are very unsatisfactory. This, I suppose, is the experience of almost all observers. In cases of this description the operation should only, I think, be performed when medicinal treatment has been thoroughly tried and failed, and when the conditions are desperate,—in cases, for example, in which the frequent recurrence of the fits unfits the patient for the ordinary duties of life, is producing great mental deterioration or actual insanity. I have frequently been consulted in cases of this description, and I have invariably left the decision, as regards the question of operation, to the patient or his friends. The position I take up is this:—That drug remedies having failed, the disease is likely to continue and the mental deterioration to become worse rather than the reverse; that the operation is attended with little risk to life; that it may perhaps give some temporary relief; but that it is not, so far as my experience enables me to judge, likely to produce any permanent benefit. In short, in this class of cases the operation is purely an experimental one; and, so far as my information enables me to judge, an experiment of a very doubtful kind.

Experimental Operations.—As Prof. Annandale has said, there are many cases in which the question of an experimental operation has to be considered. In many cases of brain disease the diagnosis is necessarily more or less doubtful. In many cases it is impossible to say, without opening the skull, whether there is anything which can be removed or reached. In cases of this kind, when drug treatment has been thoroughly tried and failed, when the condition of the patient is desperate, when life, as it often is in such cases, is hardly worth living, we are warranted, I think, in risking a good deal (but in trephining the risk is not great), and in advising that an experimental operation should be performed in the hope that the operation may give relief. Several cases of this description have come under my own notice. There is one at present in the Infirmary, which I very recently passed on to Mr Cotterill. The details of the case are as follows:—

A. B., aged 15, female, was admitted to Ward 27 on the recommendation of Dr Thomson of Musselburgh, suffering from left hemiplegia, loss of vision, and marked mental deterioration. The history which was obtained was that the patient was in good health, fairly intelligent, and able to read and write eight months ago, when she was admitted to the Inveresk Poorhouse. Three months after her admission to the Poorhouse (five months ago) she began to complain of pain in the head, and became weak.

On admission to the Infirmary the left arm and leg were found to be paralyzed and rigid (the right leg was also to some extent affected), and the mental condition markedly deteriorated. The patient lies curled up in bed, with the knees drawn up. She seems to understand some things which are said to her, but gives no intelligent answers to questions put to her, and does not volunteer any spontaneous speech utterances. When examined or spoken to she cries out—the clinical clerk who took notes of the case says—"like a cat." She passes her evacuations under her. She frequently puts the right hand to the right side of the head and moans as if from pain. Sight seems impaired. The optic discs are distinctly atrophied.

Now, in this case the diagnosis is by no means clear. Dr Thomson assures me that there is every reason to believe that the patient is the subject of inherited syphilis, but whether the cause of the symptoms is a localized syphilitic growth (gumma), or a more widespread syphilitic degeneration, it is (chiefly owing to the mental condition of the patient and her inability to describe her symptoms) impossible to say. It is not unlikely that both morbid conditions may be present. So far as I can judge, there is no prospect whatever of the patient improving under any kind of medicinal treatment. Iodide of potassium and mercury have been tried in full doses for several weeks without any benefit whatever. Under such circumstances it is, I think, quite justifiable to perform an experimental operation; and it was with this object that I transferred the case to Mr Cotterill's care. There is nothing to show definitely that the lesion is situated on the surface of the brain; it is certain, however, that the motor tract passing from the right hemisphere is implicated in some part of its intra-cranial course. Possibly a lesion on the surface of the motor cortex may be found, though I must say I think the chances are against the presence of a removable tumour, and it is on the chance of finding such a lesion that I have advised an experimental operation in this case.

Another case in which the indications for operation seem to be more clear is that of a girl whom, as it happens, I sent to Mr Cotterill to-day. She has been under observation for the past year. She suffers from right-sided hemiplegia, which dates from early life, epileptiform convulsions, and mental deterioration. During the last few years her fits have increased, and her mental peculiarities and defects have become much more marked. Many months ago the question of trephining was considered; in fact, it was then arranged that she should be admitted into Mr Cotterill's Ward in order to have the operation performed, but at the last moment her parents objected. She has lately become so much worse and so unmanageable, that they are now anxious that something should be done. As their clergyman, who came to see me about her the other day, says, she can no longer remain at home; unless something is done to relieve her, she must be sent to an asylum. Further, he pointed out to me that in her present condition her life is not worth living. She is not only a burden, but a troublesome burden, to her friends; and her mental deterioration is so great that she can hardly be looked upon as a reasonable human being.

In this case, which in some of its features resembles that which Dr Gibson has brought before us this evening (Dr Felkin's successful case of trephining), the indications for operation are much more clear than in the last case; for we know, as a matter of experience, that in most of these cases of hemiplegia dating from early life, in which convulsive seizures are subsequently developed, the lesion is cortical in its seat. It is probably only in rare cases that an operation will be attended with such marked success as in Dr Felkin's case; for in many cases the cortical tissue is sclerosed and permanently irretrievably damaged. But there are fair grounds, I think, for supposing that in a certain, though it may be only small, proportion of these cases the severity of the epileptic attacks will be restrained, or the fits perhaps altogether arrested, by surgical operation removing a cicatrix which is a source of irritation, or cutting out a portion of the motor area. (As Mr Cotterill pointed out in his remarks, the patient is already hemiplegic; the risk of producing paralysis need not, therefore, weigh so heavily against an operation in this case as it would in a case of epilepsy in which there was no paralysis.) Further, it should be remembered that unless a large portion of the motor area is removed, the risk of the production of permanent paralysis is probably not so serious as was at one time thought. It seems certain that in many cases a considerable and satisfactory amount of compensation is developed. In many cases (cases in which the position of motor grey matter which is removed is small) the resulting paralysis is only temporary.

In a case of infantile hemiplegia and epilepsy which I saw with Dr Thin about two years ago, and which was subsequently admitted into the Infirmary and trephined by Mr Wallace, the operation has been undoubtedly beneficial. In that case no lesion was found on the surface of the motor cortex.

In another "experimental case" which Mr Caird trephined some years ago, the operation undoubtedly gave relief. The patient suffered from severe headache and other symptoms, which I need not occupy time by detailing in full. He had been seen by Dr Hughlings Jackson, who was of opinion that there was either a "coarse" lesion, or that the case was an unusual and peculiar form of megrim. Dr Jackson seemed to favour the former supposition, as Mr Caird and I were inclined to do. But the experimental nature of the operation was fully recognised by us all. No lesion was found; but, as I have already said, relief was obtained.

Cerebral and Cerebellar Abscess.—If there had been time I would have liked to have discussed the differential diagnosis of cerebral and cerebellar abscess, meningitis, sinus phlebitis, and tumour. I have given a good deal of attention to this subject, for I have had several cases of abscess of the brain of great interest under my care. Most of these occurred years ago.

So far as my experience enables me to judge, abscesses of the brain, the result of ear disease, are, comparatively speaking, rare in physicians' practice; I suppose the majority of cases find their way to the aurist and surgeon rather than to the physician.

The brilliant successes which have been obtained in some cases of temporo-sphenoidal abscess clearly show that where there is reason to suspect the presence of an abscess of the brain, the operation of trephining should be performed, and the brain tissue explored in the hope of evacuating pus. I refer to the cases in which the diagnosis of abscess is by no means clear. The operation itself adds little additional risk. The position I take up is this:—Given definite and distinct cerebral symptoms, with middle-ear disease and a purulent discharge from the ear, the operation of trephining is warranted, even when the physician is uncertain as to whether the cerebral symptoms are clearly indicative of an abscess or not. In some cases it is, I hold, absolutely impossible to distinguish between abscess associated with surrounding cerebritis on the one hand, and meningitis on the other. In those cases in which the collection of pus is encapsuled, and in cases of acute localized abscess in which there is no surrounding cerebritis or associated meningitis, the diagnosis is much more easily made. In cases of this kind diffuse purulent meningitis and sinus phlebitis can usually be excluded. Further, it must be remembered that in some cases it is impossible to say whether the cerebral symptoms are the result of a cerebral abscess, or merely of the local irritation at the periphery, *i.e.*, in the diseased ear. Headache, vomiting, giddiness, and even epileptiform convulsions, may undoubtedly result from peripheral ear disease; but they are much more likely to be due to a cerebral lesion, *i.e.*, abscess or localized meningitis. Changes in the optic discs, though by no means always present in abscess, are, in a doubtful case (I mean a case in which the symptoms may be the result either of an abscess of the brain or of peripheral irritation arising in the ear), highly suggestive of the more serious condition. In cases of suspected abscess the presence of optic neuritis is a most important symptom; but a case which I recorded some years ago in the *Edinburgh Medical Journal* seems to show that it may be merely the result of a localized meningitis.

When, as in the case which I have just related, there is a doubt as to whether the symptoms are the result of local ear disease, or localized meningitis, or of cerebral abscess, I am strongly disposed to think that the operation of trephining should be performed. It is better, I think, under such circumstances to treat the local ear disease by operation and to explore the temporo-sphenoidal lobe at one and the same time, rather than to treat the local condition first, and to see whether the symptoms are relieved by the operation on the ear or not. In my opinion, the slight additional risk which trephining and exploring the temporo-sphenoidal lobe entails is far outweighed by the risk of allowing a suspected and possible abscess to continue and progress.

Of late years very few cases of cerebral abscess have, as it happens, come under my notice. In two cases only has the operation of trephining been performed. One was the case of a woman who was seen a few years ago in private practice. All the symptoms of cerebral abscess were present. Mr Caird performed the operation, and explored the temporo-sphenoidal lobe in several directions, but no abscess was found. We decided under these circumstances to do nothing more. We did not explore the cerebellum. In the present position of our knowledge, that, no doubt, would have been done. The patient died, and a post-mortem was, unfortunately, refused.

The second case was the case which Prof. Annandale referred to in his opening address. In that case I diagnosed an abscess in the right temporo-sphenoidal lobe, and advised that it should be evacuated. As Prof. Annandale has told us, eight ounces of pus were withdrawn. The patient, so far as the cerebral condition went, made an uninterrupted recovery. Unfortunately, he died some ten days after the operation from a septic pneumonia. On post-mortem examination the operation wound and the cerebral membranes were absolutely healthy; the large abscess cavity had contracted so completely that it could hardly be discovered post-mortem. The autopsy was made by Dr Bruce.

A case of great interest, and to which I would like to refer in some detail, came under my notice a few months ago. It was as follows:—

M. I., aged 20, was admitted to Ward 5A on 16th June 1893, suffering from headache, vomiting, giddiness, and fits, which were said to be hystero-epileptic in character. Four months before admission the patient had been confined. During the whole of her pregnancy she had suffered more or less from headache and vomiting. On admission the temperature was subnormal, the pulse 72. The patient had a stupid, heavy expression; but this, we subsequently learned, was in some degree natural to her. The urine contained a large amount of albumen and numerous granular casts; on standing, a heavy deposit of beautiful crystals of phosphate of lime were thrown down. The gait was slightly staggering; the knee-jerk was increased in the *left* leg. The patient complained of double vision; the left pupil was larger and more sluggish than the right; and on ophthalmoscopic examination, well-marked optic neuritis was present in the left eye, and commencing optic neuritis in the right. The headache was severe, and the vomiting frequent. The headache and vomiting occurred together. The headache was usually worse at night, and first thing in the morning before the patient got up. The fits for the most part consisted of a feeling of cramp and spasm about the mouth; every now and again these localized spasms were followed by generalized muscular contractions, more marked on the right than the left side of the body. I unfortunately had no opportunity of observing the spasms for myself.

Now, in this case the headache, vomiting, optic neuritis, and convulsive seizures were certainly suggestive of one of three conditions,—cerebral tumour, abscess, or uræmia (lead poisoning could be absolutely excluded; and the condition of the pulse and temperature precluded general meningitis).

On examination, it was found that the patient was deaf in the left ear; and on inquiring into the history it was ascertained that six weeks previous to her admission she had suffered from pain in the left ear, followed by otorrhœa.

Under these circumstances, the symptoms seemed to me to suggest either cerebral abscess or uræmia. It seemed unreasonable in the circumstances of the case (*i.e.*, considering that there was middle-ear disease and albuminuria, two conditions capable of producing the symptoms) to suppose that a third condition (tumour) was present.

On June 22nd Dr M'Bride kindly saw the case with me. He found a perforation in the left drum; the discharge, which was very scanty, was not fœtid; and the drain seemed free. At that time there was no pain in the ear.

Under these circumstances Dr M'Bride was strongly inclined to think that an abscess could probably be excluded; the condition of the ear did not seem to him such as was likely to lead to the production of a cerebral abscess. My own view was in favour of abscess rather than uræmia; the headache was much more severe than the headache of uræmia; the optic neuritis (which was much more marked, it must be remembered, in the left than in the right eye) was strongly in favour of abscess rather than kidney disease; while the localized character of the spasms—beginning in the right cheek, and affecting more particularly the right side of the body—seemed to me to support this view. Under these circumstances, I was disposed to think that the operation of trephining should be performed; but taking into account the strong opinion which Dr M'Bride had expressed, I determined to wait and watch the case, for a few days longer at all events.

During the night of the 23rd the patient had a very severe attack of headache and vomiting, during which she became quite collapsed; her condition was so grave that the nurse thought she would have died during the attack; she was with difficulty revived by the administration of brandy. On the morning of the 24th the face had the heavy congested look which is difficult to describe in words, but which I know by experience is highly suggestive of a grave intra-cranial lesion, and which is quite unlike the pale appearance of uræmic coma. Under these circumstances I thought further delay dangerous and unwarrantable. I accordingly asked Mr Cotterill to trephine the patient.

The operation was performed on the afternoon of June 24th. On opening the skull, the brain and its membranes appeared to be natural. There was slight but not marked evidence of increased intra-cranial pressure. The temporo-sphenoidal lobe was explored in three directions—downwards and forwards, forwards and inwards, and upwards and backwards. No abscess was found. The second puncture—that which was made downwards and inwards—was followed by the evacuation of a considerable quantity of clear cerebro-spinal fluid; Mr Cotterill and I were both of opinion that the lateral ventricle had been tapped. As nothing was found in the temporo-sphenoidal lobe, and there were no definite symptoms pointing to an abscess in the cerebellum, we agreed that further operation (trephining the cerebellum) was uncalled for. The trephined wound was therefore closed in the ordinary manner. After the operation the patient made an uninterrupted recovery; the headache and vomiting speedily subsided; there was no return of the epileptiform attacks; and the optic neuritis immediately declined, and in the course of a few days entirely disappeared.

On the 8th of July the patient was re-admitted to the medical ward under my care. She remained in hospital until the end of July, and was then discharged, apparently well, but the urine still contained albumen and casts. She has continued well until the present time. I saw her last Wednesday (February 14th); she then looked the picture of health, robust and ruddy. She says that she occasionally still suffers from headache, but that since her discharge from hospital it has never been severe. Her eyesight is perfect, and the periods are natural; but the urine still contains albumen, though its amount is, as compared with that which was present when she was in hospital, small.

The case is one of great interest from many points of view. The diagnosis was most difficult. I am still disposed to think that the symptoms were more suggestive of abscess than uræmia; and, if I were to meet with another case in which the same conditions were present, I should again take the same view and again pursue the same course. I should again recommend that the temporo-sphenoidal lobe should be explored on the chance of finding pus. The very severe character of the headache, the papillitis (the retinal changes were not the ordinary albuminuria retinitis), and especially the fact that the optic neuritis was much more marked in the left eye—the eye on the same side as the supposed cerebral lesion—and the peculiar character of the convulsive seizures (which were indicative of localized cerebral disease rather than of uræmia), were, in my opinion, much more suggestive of cerebral abscess than of uræmia and kidney disease.

But perhaps the most important lesson to be learned from the case is the relief which was immediately obtained from all the urgent symptoms by the operative procedure which was carried out. The case suggests the advisability of trephining for the relief of increased intra-cranial pressure in bad cases of uræmia. Do not let me be misunderstood. I do not mean to suggest that trephining should be performed in every case of uræmia. In the great majority of cases, the ordinary remedies—purgation and profuse sweating by means of hypodermic injections of pilocarpine—are, of course, all that is required. When these remedies fail, bleeding is often, I think, the most efficacious means of treatment. In more than one case of scarlatinal nephritis I have seen the uræmic convulsions immediately relieved, never to return, by the abstraction of a few ounces of blood from the arm. But in bad cases of uræmia in which the conditions are desperate, the operation of trephining may perhaps in the future be found to be an important means of treatment. It was certainly most successful in this particular case.

It will be noticed that in the case which I have just related the brain was freely punctured in three different directions, and a large quantity of cerebro-spinal fluid was withdrawn from the lateral ventricle with absolutely no prejudicial result. The same observation has, of course, been previously made by many other observers; but I would wish to remark that puncturing of the brain by a fine aseptic trocar and tapping the ventricles is not always unattended with danger. In a case which Mr Cotterill and I have recently had under treatment, the operation was followed by death. The case was one of tubercular meningitis.

Trephining in Tubercular Meningitis.—For some years past I have suggested in my lectures that the operation of trephining may possibly be useful, and should certainly be tried as an experiment in cases of tubercular meningitis. This suggestion was based on the fact that tubercular peritonitis has, as is well known, been in many cases cured by opening the abdomen. Why simply opening the abdomen should produce immediate benefit, and in some cases complete cure, of a tubercular peritonitis, we do not as yet know. Whether the beneficial result is due merely to the entrance of air or to the relief of the pressure and evacuation of some of the peritoneal fluid, is as yet undetermined. The latter seems the more likely explanation, and in tubercular peritonitis continuous drainage with aseptic precautions is probably the proper treatment; but it must be remembered that in some of the cases in which the operation was beneficial the abdomen was immediately closed. In some of the cases no continuous drain was established. But be this as it may, there can be no doubt as to the fact—the benefit which results.

Now, although in rare cases tubercular meningitis is recovered from, the disease is almost invariably fatal. Any plan of treatment, therefore, which seems to hold out even a possibility of success deserves a trial. These are the grounds on which, as it seems to me, the operation of trephining deserves a trial in cases of tubercular meningitis. The same idea has no doubt occurred to many minds. In the year 1888 an American surgeon, Mr Keen, advocated the operation in print, and published minute directions as to the best method of tapping the ventricles.

Now, if the operation is to be attended with success in tubercular meningitis, it must, I think, be performed in the early stages of the case; it cannot be expected to effect a cure when the disease is far advanced. Merely tapping the ventricles for the relief of intra-cranial pressure in the later stages of the disease—the plan which I understood Dr Carmichael to advocate at the last meeting—may perhaps be useful as a palliative measure, but is not likely to arrest the progress of the disease, or to cure the condition, and this is the object of course which has to be arrived at. The details of the case are as follows:—

Case of Tubercular Meningitis; Trephining; tapping the Lateral Ventricle; Death.—H. S., aged 19, was admitted to Ward 5A on 11th February 1894, suffering from headache and vomiting and other symptoms suggestive of commencing meningitis.

Previous History.—The patient was in her usual health until the beginning of January. About that time she began to complain about pain in the left shoulder, which was put down to rheumatism. This pain lasted for a fortnight, and necessitated the patient remaining in bed. It then entirely disappeared, and she felt quite well until a week later, when she began to suffer from headache and vomiting, both of which have continued up to the present time. The vomiting occurred both immediately after, and independently of, taking food. The headache was referred to the frontal region. A week before admission the symptoms became so bad that the patient had to take to bed. The pain has prevented her sleeping of late. Yesterday she wandered slightly. No squint was observed before admission.

The patient suffered from a running ear in childhood ; which side not known. It occurred after measles. She has also had scarlet fever.

Family History.—The patient is the fourth in a family of eleven. Two girls are dead—one in infancy, the other shortly after birth. One brother suffers from a weak chest (cough, sweating, loss of flesh). One sister suffered for many years from a running ear. The mother died of erysipelas. The father is healthy.

Condition on Admission.—The patient is in a stupid, semi-comatose condition. Temperature 100° ; pulse 90 ; respirations 24. The pupils were contracted and equal ; light seems to hurt the eyes and to aggravate the headache. There is slight nictitation. The tongue is furred. The pain, which is chiefly referred to the forehead, is also felt all over the head. The optic discs are normal. The heart and lungs appear to be normal. There is no pain or tenderness over the abdomen, but there is slight gurgling in the right iliac fossa. The abdomen is not distended ; in fact, rather the reverse. The bowels are constipated. There has been no influenza in the house from which the patient has come.

Ordered quinine three grains, and antipyrin ten grains, every three hours ; also a dose of cascara.

February 12th.—Some wandering last night. This morning the patient lies in a listless, drowsy, semi-comatose condition. Slight internal strabismus of the right eye. The right pupil is a little smaller and more active than the left, which is moderately dilated. When roused, the patient complains of headache. No twitching has been noticed in the facial or other muscles. No cough. *Tache cerebrale* very marked over the abdomen. The abdominal reflex is much more active on the right than on the left side. The plantar reflex is also more active on the right than on the left side. The knee-jerk is more active on the left side. Bowels well opened through the night ; the motion was formed and quite normal. Temperature still elevated. The ears seem natural.

Ten grains iodide of potassium every four hours.

February 13th.—Had a fairly quiet night ; is rather more sensible this morning ; complains of pain all over the head. There is distinct loss of power in the left arm and leg ; voluntary movements of the left arm and leg are attended with tremor. The knee-jerk and plantar reflex are absent in the left leg, active in the right.

The case seems without doubt to be one of meningitis, in all probability tubercular. The strabismus is much more marked this morning. The optic discs are still normal.

After consultation with Mr Cotterill it was decided to trephine if the relatives consented. The relatives did consent, and the operation was performed.

An opening was made into the right side of the head in the parietal region, just behind the motor area. On removing the disc of bone, the membranes bulged very distinctly through the opening, but did not pulsate. On opening the dura, the cerebral substance bulged so much through the opening that it formed a hernia. The exposed portion of the membranes appeared perfectly normal. The brain did not pulsate. A fine trocar and cannula was introduced downwards and forwards with no result. A second exploratory puncture was made more downwards and inwards to the distance of 1¾ inch from the surface. When the trocar was withdrawn a jet of clear cerebro-spinal fluid escaped with much force. It spouted out for fully 9 inches or a foot. Some of the fluid was lost; we reckoned that 3 oz. at least escaped. As the tension of the cerebro-spinal fluid in the ventricles was evidently very great, we decided to leave the silver cannula *in situ*. The disc of bone was therefore split in two and the cannula left between the two portions. The wound was then closed in the ordinary way. The patient never regained consciousness. The paralysis in the left arm and leg seemed to be more marked after the operation. Death took place at 4 A.M., fifteen hours after the operation.

The post-mortem examination was made on February 16th. The wound was absolutely healthy.

On removing the calvaria, distinct evidence of increased intra-cranial pressure was present; the convolutions were flattened and the sulci effaced, but not to a marked degree. At the base, round the optic chiasma and over the intrapeduncular space as far back as the pons Varolii, there was distinct evidence of commencing meningitis, in all probability tubercular. The track of the wound which the cannula had made down to the lateral ventricle was absolutely healthy. The lateral ventricles were collapsed. A black clot, the size of a small almond, was found in the right lateral ventricle; there was no clot in the fourth ventricle. The choroid plexus and membranes passing out of the transverse fissure were deeply injected, and apparently in a condition of commencing meningitis. There were no distinct tubercles visible to the naked eye. The spinal cord and its membranes were healthy. The parts have not yet been examined microscopically. The other parts of the body were not examined; it was with difficulty that permission was obtained to examine the head.

The result in this case was unfortunate. The exact cause of death was not clear. But notwithstanding the unfortunate result in this particular instance, for the reasons I have already given I am still disposed to think that the operation (trephining and continuous drainage) deserves a trial in tubercular meningitis; and I repeat, if the operation is to have any chance of success, it ought, in my opinion, to be performed in the early stages of the disease.

Trephining in Cerebral Hæmorrhage.—I have seen several cases of cerebral hæmorrhage in which I think the relief of a rapidly increasing intra-cranial pressure (which speedily proved fatal) might possibly, for a time at least, have warded off the fatal result; but I doubt if the cases in which the operation is likely to be successful are numerous. Cases of this kind are generally seen in private practice; their course is often rapid; no surgeon is at hand; and the conditions for operation are therefore either unfavourable or altogether impossible. I am speaking, of course, entirely of non-traumatic hæmorrhage. In these cases the hæmorrhage is of course, in the vast majority of instances, intra-cerebral. I have seen several cases in which a large hæmorrhage was evidently steadily progressing in the interior of the brain, producing deeper and deeper coma, greater and greater embarrassment of the respiration and of the reflexes, and in which all at once spasmodic contractions or other symptoms indicative of a sudden burst into the lateral ventricle occurred. It is perhaps not too much to hope that in some cases of this kind tapping the hæmorrhagic cavity might prevent the rupture into the ventricle and possibly ward off death.

Another case in which the operation of trephining might perhaps have prolonged the life of the patient and possibly have prevented death, was one which I saw some years ago with Dr Milne Murray. In that case we saw the patient gradually die before our eyes from an increasing intra-cranial pressure, which was clearly due to a hæmorrhage on the surface of the brain.

The post-mortem showed that the diagnosis was correct. The hæmorrhage had resulted from the rupture of an aneurism of the middle cerebral artery, deep down in the fissure of Sylvius. It is doubtful whether in this particular case trephining would have prevented death; but it is certain, I think, that if it had been possible to trephine and relieve the pressure, the fatal issue might have been postponed. In this, as in the great majority of cases of meningeal hæmorrhage of spontaneous origin (I do not of course refer to cases of pachymeningitis hæmorrhagica), the course of the hæmorrhage was so rapid that an operation was out of the question. The full notes have already been published in the *Edinburgh Medical Journal.*

III.—MORISON LECTURES ON INSANITY.

By John Batty Tuke, M.D., F.R.C.P.E.

(*Delivered before the Royal College of Physicians of Edinburgh.*)

(*Concluded from page* 991.)

Lecture V.

Mr President and Gentlemen,—Before taking up the question of treatment, you must allow me to state what appear to me to be the main conclusions arrived at in previous lectures. These are, first, that over-exertion of the areas of the brain which form the substrata of consciousness produces changes in anatomical and physiological relations evidenced by trains of physical and mental symptoms; second, that the primary change is congestive in character; and third, that secondary changes may be produced, resulting in impairment of the systems of connections and permanent insanity.

Were we dealing with the structure, function, and disease of any other organ, would not these conclusions be accepted as inevitable? and, although differences of opinion as to details might arise, would not the relation of cause to effect be generally admitted? Why is it that when the brain is approached a degree of hesitancy is manifested, expressive of reluctance to admit that perversions of its functions differ in some inscrutable manner from the results of pathological modifications of other systems? Is it because the physiologist can offer no tangible explanation of what occurs during the interval between sensation and reaction—an interval which he (perhaps too willingly) resigns to the psychologist[1]—and can venture no hypothesis as to the nature of the processes accompanying transformations of specific energies? If that be so, the same sort of glamour must surround all vital processes. The popular mind, however, accepts the didactic statements of the scientist on moot points, and attaches little importance to the hiatus which invariably exists in his lines of argument and experimentation; not recognising the fact that, as the processes going on in each system are investigated, the scientific observer finds himself at one period or another of his work on the edge of a gulf he cannot bridge. At present, and it is to be feared for long, we must content ourselves with the study of the conditions under which life can be maintained, in the hope that we may somewhat narrow the gap between a knowledge of those conditions and a knowledge of the nature of life itself.

To approach the treatment of the Insanities through the portal of psychology is hopeless; we have gained nothing by taking that road in the past, and can hope for nothing in the future. Much harm has been done by the prominence given to a sort of pseudo-psychology by the specialty which professes the treatment of the insane. It has kept up the idea contained in the term "mental disease" by thought, word, and action. We hear of medico-psychologists, psychiatric medicine, psychological analysis, and so on. As a matter of fact, psychology has just as much, and no more, to do with the treatment of insanity as it has to do with the treatment of other forms of disease. We are no more psychologists than you are; and we know no more about it than the physician who undertakes ordinary practice. This affectation of a special knowledge of the science has done the specialty much harm, and, through it, the insane. You have to deal with perversions of the mental faculties day by day; you have to deal with hysterics, alcoholists, opium-eaters, so-called neurasthenics, the weakness of old age, the phthisical, the febrile, the pregnant, and endless other types in which modifications of psychological functions are manifested. Do you apply to the relief of such abnormalities the precepts of any special school of psychology? I think not. In every case of disease you meet with, in addition to your special professional knowledge, you apply the scheme of practical psychology which has grown up in each and all of you, based on the experience of life. Does a man know anything more about the workings of the component parts of the mental constitution, and their attributes, because he has practised more amongst the insane than the sane? Has any great scheme of psychology emanated from an asylum? None that I know of. In point of fact, the psychologist has invaded the domain of physiology much more effectually than the so-called psychiatric physician has that of psychology. I say this prominence given to psychology has done harm to the insane, for it not only has kept in the background the study of the relations of the Institutes of Medicine to the study of the Insanities, but it has got apparently inextricably complicated with the system of treatment and management. Till Bevan Lewis published his important book on Insanity, no man in Great Britain ever even attempted to describe the anatomy of the organ the aberrations of which he was dealing with: many authors of such works prefaced their descriptions of symptoms by attempts to analyze the psyche, but till that time not one single author out of the dozens who have written on the subject had laid down the anatomy of a convolution. Under these circumstances it was inevitable that the study must have been conducted on psychological and clinical lines. I think it will be accepted as a postulate that the scientific knowledge of the nature of any disease depends primarily on a knowledge of the anatomy of the part affected. No one wishes to minimise the importance of clinical observation in the scientific scale, but in order that it may take its true position it must stand in direct relation to structure and function, otherwise it cannot rise above the level of empiricism. That our advances in this country have been mainly in the direction of clinicism is not the fault of men, but of systems, for the establishment of which they were in no way responsible.

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[1] Burdon Sanderson, "Presidential Address," British Association, 1893.

You will perhaps remember that in the first lecture we speculated on the attitude the profession would assume to cases of Insanity presented to it for the first time; and I asked you to try to imagine the position we would take up if, with our existing knowledge of brain anatomy and physiology, and an extended acquaintance with other forms of disease, we were called on to diagnose and treat the patients so presented to us. I ventured the opinion that under these circumstances we would offer the provisional diagnosis of "disease of the brain with mental symptoms." We may now take a further imaginary step, and suppose that one or both of the cases died from some intercurrent disease, and that on post-mortem examination evidences of congestion, and its secondary consequences, were discovered. It would not be necessary in order to prove congestion to produce a cortex engorged with blood, in a so-to-speak erysipelatous condition; were the products of inflammation found in the form of dilated vessels, extravasated leucocytes, pigment, and marks of exudation, the evidence would be sufficient. I submit that under these circumstances the natural history of the disease would be complete, and that we would have before us a pathological entity, whether we called it "congestive insanity," "acute mania," "acute melancholia," or "idiopathic insanity." I think the last term is the best, as it expresses that the symptoms had been produced by morbid processes commencing primarily in the brain. It might be convenient to differentiate further by speaking of "idiopathic mania," and "idiopathic melancholia;" but if we fully understand what are the contents of a term, it is of secondary importance what the term itself is. The essence of any of these terms is over-stimulation, followed by exhaustion of cell function, and production of certain mental and physical abnormalities.

The principal deductions to be drawn from what has been already said are twofold: first, that we must attack these abnormalities through the organ primarily affected; and second, that the first object to be obtained is REST for the brain. This can be got by following the lines of treatment adopted in the case of every-day disease. When we meet with a case in which we have reason to believe that active implication of a special organ will result not only in perversion of its own function, but will be productive of degradation of other systems, we, as a rule, take the preliminary precaution of confining the patient to bed, and of keeping him there till such time as we procure reduction of the primary morbid condition. In nine cases out of ten bed is the best place to treat the prodromal stage of idiopathic insanity. Further, should the case not have been submitted to us till excitement of a maniacal or melancholic type has developed itself, or our treatment of the early stage not have been entirely successful, bed is still the proper place to conduct treatment. In the incipient case the person will be very ill if the disease is not arrested; in the acute case the person *is* very ill. Why this emphasis? Because a very usual practice is to prescribe entirely different conditions for treatment. Acting on the psychological principle that the mind is affected and requires to be diverted, a common custom is to order foreign travel, a long voyage, change of scene in degree and kind according as the circumstances of the patient permit. In the very large proportion of cases these procedures appear to me (to put it roughly) as inadmissible as it would be to order a patient suffering from incipient pneumonia to walk up a mountain side. Let us look at the position from both aspects—the psychological and the pathological. We know that the exciting cause is worry, *i.e.*, a constant succession of painful emotions, which has produced the condition of the brain already indicated. But, it may be asked, how are we to discriminate between this state and an attack of low spirits so constantly observed? There is a very distinct line of demarcation between depression of feeling within the limits of health and the depression of feeling resulting from morbid processes going on in the brain. In the one we have a function exercised to its uttermost, yet never diseased; in the other we have a function exercised beyond normality, beyond the power of the organ to obtain immediate recuperation. But between the two there is a distinct line of demarcation. A mere fit of "low spirits," from whatever cause, does not prevent a man from using his intellectual faculties. Circumstances influence him; he can review his position, notwithstanding that he does so gloomily, and the turn of events and the moderating influence of time produce restoration of physiological and psychological equilibrium. In this case the brain has evidently not been diseased; excitation has not produced morbid processes. The symptom which indicates that the brain is distinctly affected, that the limit of health has been passed, is modification of the natural influence of external circumstances, conveying to the pathologist indications of implication of the integrity of the brain elements. This is further expressed by the falling off in bodily condition. We all know the general condition better than I can express it in words; why, then, should we be so prone to merge the two in one when we come to devise measures for their relief? It is true, rest is demanded in either case. *Mais il y a fagots et fagots.* In the one the rest which comes from a change in *the character* of stimulus is called for; in the other the rest which comes from *cessation* of stimulus, so far as it is possible to obtain it, is demanded. The two conditions were probably represented by the second and fourth conditions of Hodge's cells; the one being in a state admitting of rapid repair, the other having so far lost its pabulum as to prevent the normal exercise of function, and to require a long period for its reconstitution. Stimulation is not to be reduced by subjecting the patient to the excitement and worry of travelling, taking travel as an instance of psychological methods of treatment; nor is the tendency to degradation of the general system likely to be arrested. It is not a scheme of treatment which would be adopted in analogous conditions of any other organ. I am far from saying that in certain forms of insanity such a system of treatment is not advisable; in certain degenerative cases it may be employed, but even in these the utmost caution is necessary; but in all cases in which there is reason to believe that active disease of the convolutions is imminent, or actually in progress, rest of the most perfectly attainable character is urgently called for, and this rest is best obtained in bed. I may be asked, does not the patient resent such confinement? My answer is, rarely in my experience. You may remember that in a former lecture I said the patient in the initial stage is often painfully aware of the nature of his malady—that he dreads the incidence of insanity. He is conscious that he is unwell, that he does not react normally to external circumstances, that he cannot apply himself to the everyday business of life.

The explanation of this fact must be left to the psychologist, but that it is a fact must be supported by the experience of many present. Under these circumstances the patient finds comfort in accepting the position, and in the assurance that, if he will submit himself to treatment for a few weeks, the brain condition which is the cause of his malady will be overcome. I quite see the apparent contradiction of the statements that patients in the condition we are speaking of do not react normally to external circumstances, and that they can accept a position. I can only take refuge in the clinical fact that it is so. It may be in either case a matter of degree; abnormalities have many degrees of intensity, and it may be that refusal and acceptance are both imperfect. There is no doubt that the sane has, except in extreme cases, a powerful effect on the insane mind. In considering the treatment and management of the insane this must be always kept in mind. It is perversion, not destruction, of function we have to deal with, consequent on changes in, but not destruction of, the organ. It is a matter of *derangement* of both organ and function. Although deranged they may work imperfectly, or one part may act and another not. Still a certain power of work is evidently left. Few men are perfectly insane; many insane persons can listen to argument, and be more or less influenced by it. Have we not seen the victim of *delirium tremens* pull himself together for a few minutes? In an incipient case of idiopathic insanity mental power is not lost, and the patient is, in nine cases out of ten, able to submit himself to discipline. The influence of a stronger mind always tells on a pathologically weaker one. I need not tell you that the physician is most powerful in the sick-room or hospital, and that he strengthens his position when he orders the patient to bed. Even in cases which at first resent the order, as soon as it is obeyed no difficulty arises in maintaining it. A good nurse, or even two may be necessary. The ordinarily trained nurse is sufficient, unless considerable excitement intervenes, in which case the so-called "mental" nurse is desirable; but she must have had hospital training. I do not intend here to go into the question of the nursing of the insane, further than to say that all "mental" nurses should have been trained in a general hospital, or under a hospital nurse in an asylum. Good as the old "attendant" may have been, she never appreciated the fact that her "mental" patient was an invalid first and an insane person after. This the hospital trained attendant appears fully to understand; her patient is to her a sick man or woman,—the insanity is an incident in the case. This is due to her training; which has also engendered in her a stricter sense of duty, a knowledge of various important manipulations, and increased power of observation. Such nurses can and do tend men unless excitement supervenes. Would that some scheme could be instituted by which male nurses could be instructed in the same manner as women; were it only that one man-nurse could often manage, where it is, for obvious reasons, necessary to employ two women. As a rule, however, we are compelled to call in the male nurse as we find him, and, if he has been trained as he should have been, he will do well enough. With such a staff the physician has his patient practically in his power, even in the case of one who enters protests against the measures taken. The protests soon die away, the physician's position is established, and the patient is under circumstances proper for the application of therapeutic agents. One word before going further. As to surroundings: Is it necessary to remove the early case from home to lodgings in the country? As a rule, I think not. If he is confined to his own room, and kept entirely away from his family or friends, it is enough. He should be carefully secluded, and it may be even desirable that the rest of the family should leave the house. Visits stimulate; further, they encourage discussions on the propriety of the physician's line of management, and so reduce discipline.

The object to be obtained is sleep; for it is the first indication of returning brain health. We are dealing with congestion, and the return of sleep is the physiological sign that the cerebral vessels are re-acquiring their power of contractility. The observations of Durham and Jackson, taken along with those of Mosso and others, show that during sleep the brain vessels of the superior convolutions shrink. I must here enter a protest against the common practice—one possibly forced on the physician by the pressure of circumstances—of at once resorting to the administration of hypnotic drugs. We have seen the effects of prolonged stimulation of cells, and to what an extent of exhaustion they may be reduced. Let me direct your attention to certain experiments by Binz of Bonn. Taking the brains of recently killed cats and rabbits—the organs, in fact, being removed immediately after death—he placed small portions of the convolutions in (1), 0·7 per cent. solution of sodium chloride, (2), 0·2 per cent. solution of atropine sulphate, and (3), 0·2 per cent. solution of morphine sulphate, in which they were allowed to soak for fifteen minutes. The specimens were then squeezed out under cover glasses, and examined with the microscope. Those submitted to the sodium chloride and atropine sulphate solutions showed the cells scarcely, if at all, altered; whereas the cells of the portion steeped in the morphine solution had become affected, the body presenting an opalescent appearance suggestive of the commencement of evaporation. Dilute acids, lactic and nitric, 1 to 3000, had the same effect. Very dilute solutions of morphine, 1 to 5000, produced the same appearances, but not so distinctly. Chloral hydrate, chloroform, and ether gave somewhat similar results; but atropine, caffeine, camphor, and some other substances appear to have had no effect. He further found by examining the exposed brains of animals which had been narcotized by chloral hydrate, ether, and chloroform, that there was no immediate change in the vascularity of the organ, but that after full narcosis had been obtained it became anæmic.[1] Binz's observations led him to the conclusion that narcotics acted directly on the cells, and that narcosis was not produced by any constricting influence on the bloodvessels. Although these experiments cannot be held as conclusive, they are still highly suggestive, and it seems as if this line of inquiry might be followed up with advantage. What the appearance of commencing coagulation is due to is not evident; but if the action of morphia compounds and chloral hydrate have any direct action on healthy cells, all the more may they be supposed to act detrimentally on cells degraded in constitution and function. This seems borne out by clinical observation. Although sleep can be obtained by their administration, generally in larger doses than suffice for the sane subject, on awakening the condition of the patient is not improved, to say the least. My old master and friend Skae of Morningside used to lay it down as an axiom, that opium in any shape might reduce the immediate intensity of symptoms, but it prolonged their duration. If we depend on Binz's observations to any extent we obtain some indication of a reason for this opinion,—the poisoning of an already reduced organ. We have further to take into account the effects most narcotics, especially opium, have on the alimentary apparatus, which are, as has been stated, generally out of tone in the class of patients we are dealing with; the liver secretions are affected, and the general atony is increased, shown by a foully furred tongue, offensive breath, and enormous evacuations. For every reason opiates are contra-indicated; chloral hydrate is not so harmful, still it and all other narcotics should be avoided. Sleep may be attained by much simpler methods.

The method of action of counter-irritation is still very much a matter of surmise, and it is not for me to endeavour to elucidate the subject. Long clinical experience tells us that in many inflammatory and sub-inflammatory conditions its application is beneficial. I have found it so in the class of cases we are now considering. It is my custom to apply mustard on the upper part of the chest and of the back for long-continued periods, placing such a poultice on the front one night and on the back the next, alternating the application so long as the skin will bear it without vesication. It is a matter of indifference what rubefacient is employed, but mustard leaves are the most convenient. Uneasy feelings in the head are soon relieved by this process, and it not unfrequently happens that sleep for shorter or longer periods follows. Blistering is an unnecessarily severe measure. Warmth maintained by bottles applied to the feet and back, and by warm compresses over the abdomen, is often useful. Very gentle shampooing or *massage* applied to the head and neck four or five times a day for a few minutes at a time is generally soothing. This should be done by the spread-out fingers, starting from the sides and back of the head, and being carried gently down to the clavicles and the root of the neck all round. Pressure should be slight. It is possible that this process may relieve the veins and lymphatics of the neck, and consequently those of the brain. Food should be given in small quantities, and often,—every two or three hours, the largest meal being at night. As I am speaking now of food only as a sleep-producer, the general question of diet may lie over for a time. The best method of bleeding a man's brain is to draw the blood into the vessels of the abdomen by means of food; and therefore frequency of meals is called for, and the night meal should be the most plentiful. Of drugs, digitalis is the most useful, given in fairly large doses, and pretty frequently,—♏ 15 doses every two or three hours. In this disease there is considerable toleration of this and other drugs. Digitalis has no direct action on the nervous system; in cases of poisoning the intellect is in no way affected. Its action on the cells is through the vascular system, by producing contraction of the terminal vessels. When sleep follows rapidly on its administration in conjunction with the other measures just alluded to, the prospect is very hopeful, for it indicates that convolutional congestion is being relieved. That this drug acts on the terminal vessels is opposed to the views of Schmiedeberg; it is, however, in accordance with the teaching of Lauder Brunton, and my clinical observation certainly goes to support the views of the latter.

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[1] *Archiv für Experimentelle Pathologie*, Band vi.

Sheridan Lea, in his *Chemical Basis of the Animal Body*, describes neurin as a product of the decomposition of protogon, a substance obtained from the brain by Liebreich, and regarded by him as its principal constituent. Brieger has shown that "neurin is one of the most commonly occurring and actively toxic alkaloidal basic products of the putrefactive decomposition of animal tissues known under the name of ptomaines." Noël Paton tells me that on trying to draw up a statement of the decomposition products of nerve tissue, he finds the existing knowledge of the processes and of the products is so indefinite that nothing of positive value can be given; all he can say is that our present knowledge suggests how poisonous products may be developed. Under these circumstances, it is somewhat drawing a bow at a venture to suggest that neurin is the poison of exhausted cells productive of the symptoms of fatigue shown in Mosso's experiment cited in the second lecture, and of exudates due to congestion. Still I offer the suggestion. It may, therefore, be desirable to maintain diuresis, as all such compounds are removed by the kidneys. This may be one of the benefits accruing from the administration of digitalis.

Steady perseverance in this system for a week, or even less, will generally produce natural sleep. As a rule, the patient begins to sleep by snatches, and, as the case goes on, in more continuous periods No doubt steady sleep for five or six hours, or even longer, is what we hope for; but if a patient, who for days or weeks previously has hardly slept at all, and then only probably by the use of alcohol or opiates, gets five or six hours in the twenty-four by an hour or two hours at a time, he does fairly well. And between such naps there is often a calm apathy, an indifference, and lassitude, which are most useful periods of rest. Perhaps it is a mild obfuscation corresponding to the period of dementia which is so frequently observed as a *sequela* of acute attacks of mania and melancholia, a state of brain weakness, still the weakness of convalescence.

It is possible, however, that although the symptoms may become modified, they may not disappear, and the bodily condition may not materially improve. If the temperature shows even a slight evening rise, it is an indication that mischief is still going on. For the last three years I have, under these circumstances, used phenazonum (antipyrin) freely. In doses of 15 grains, given every two hours, it very generally soothes and produces sleep, and the general condition improves. We have no evidence before us as to the manner in which this drug acts on nerve cells: its influence in checking metabolism, as shown by its power of arresting the secretion of urea,[1] and its vaso-constrictor action in small doses, may be the efficient causes. Although I have frequently given antipyrin to the amount of 60 to 100 grains per diem for a fortnight at a time, I have never noticed any of the ill effects ascribed to it, except occasionally nausea and vomiting. It may be that patients in the condition we are speaking of may be more tolerant of the poison than those in whom temperature runs high. As in all nervous cases, the dosage is at first a matter of experiment; but it is quite safe to begin with the dose above indicated, raising it somewhat, and administering it more frequently according as the patient's condition improves.

There is yet another means of bleeding the encephale, which has also an important action on the general systemic nutrition of persons suffering from cortical cell weakness. I allude to the functional hyperæmia of muscular activity. Muscular exercise excites the circulation generally, and this should be avoided. Restlessness, under ordinary circumstances, cannot be overcome by an amount of exercise short of fatigue. The sufferer from the incipient symptoms of idiopathic insanity is not in a condition to stand fatigue; his nervous system is undergoing waste, and to make further demands on it is pathologically and physiologically illogical. It is not only undergoing waste itself, but it is, as a consequence of its own wasting condition, unable to exercise its nourishing functions over the system at large. Fatigue in any sense or in any degree is to be deprecated. But with the patient in bed we would lose not only the important derivative action of hyperæmia incident on muscular action, but the products of muscular waste which, to a certain extent, must accumulate under restful circumstances, would remain in the tissues, except so far as they may be removed by the almost passive action of veins and lymphatics. This hyperæmia can, however, be easily attained without making any serious call on the nervous system. Gentle shampooing of the whole surface of the body with the open hand will suffice. We require none of the refinements of the school of *massage;* only light hands, some judgment, and obedience to orders on the part of the nurses. The open hand should work gently upwards from the toes and fingers to the hip and shoulder, the abdomen should be kneaded; if this is well done—that is to say, if it does not excite the patient, as it sometimes does even those who are not nervously affected—the open hand may be succeeded by gentle kneading of the limbs. It usually is advisable to be very cautious in the employment of the shampoo, beginning with not more than five minutes at a time, and gradually increasing it to a quarter of an hour three or four times a day, according as the patient stands it. I find it better not to use it after six o'clock at night over the body, after which hour the head and neck massing should only be exercised. It is less apt to excite if oil is used. When there is a tendency to emaciation, oil gently rubbed into the skin often materially assists nutrition. Under such circumstances I not only cause the oil to be rubbed in, but the patient is advised to sleep without sheets, between blankets or in a flannel nightgown, which become more or less saturated with the oil. This sounds unpleasant, but those of us who have adopted similar measures in tubercular patients know that it is not resented. A warm bath in the evening, at a temperature not higher than 97°, materially promotes the tendency to sleep. Mild catharsis should be maintained.

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[1] Stockman, *New Official Remedies*, 1890.

If the case fails to react to these measures—it rarely does so—if sleep is not induced, its aspect is grave; and it may be necessary to administer an hypnotic. This, however, should be delayed as long as possible, and should be regarded as an extreme measure. Putting it in this way—cases are often sent to asylums whose treatment at home has been mainly conducted by the administration of opiates and other soporifics, and which are treated to a successful termination without the exhibition of any such drugs. Force of family circumstances has compelled their administration. The least harmful soporific in my experience is paraldehyde, administered in 2 to 3 drachm doses per rectum. In this manner the drawback of its unpleasant taste is overcome. Sulphonal has been much recommended, but in exhausted cases its paretic effects, which may be shown only by a slight tired feeling of the legs, renders it, in my opinion, an inferior sleep-producer to paraldehyde. I have no faith in organic extracts, or in hypnotism. The employment of the latter has, in two instances within my own experience, resulted in the production of grave evils.

Lastly, as to diet. A plain everyday medium sick-room diet, given in small quantities and often, is all that is demanded. Good soups, fish and fowl, eggs, milk, and vegetables, in judicious admixture, suffice. The poison of trade meat extracts should be avoided. I never could see the object of stuffing a patient whose digestive system is lowered in function with an amount of egg, oil, and cream that would be resented by the stomach if taken under circumstances of full health. Such a course might be advisable for a troop of soldiers about to set out on an arduous campaign, in whom reserve force should be stored up; but in our case reserve is not called for, as we can supply nourishment hour by hour in quantities which can be easily assimilated. We have to build up gradually, working on organs which are not fitted for extra exertion. General fattening of the tissues is no doubt a sign of returning health, but the mere local accumulation of fat is not. Fat follows on health, not health on fat.

As soon as we have distinct evidence of improvement in returning sleep, bodily betterment, and mental composure, although the last-named may be accompanied by stupidity, nervine tonics are of value. Till then they are useless. Without any belief in the axiom, *Ohne Phosphor keine Gedanke*, the phosphates have succeeded best in my hands. Taken over all, the Easton's syrup of the phosphates, omitting the quinine, has worked best. In certain instances 5-minim doses of liquor arsenicalis, substituted for the quinine, has been highly beneficial. For reasons stated in last lecture, emmenagogues are useless; the function returns as the balance of health of the system as a whole is becoming re-established. In like manner the direct treatment of oxaluria and phosphaturia is of no value. Along with returning health comes the time for change of scene, travel, and other means of occupation or amusement. Till then they are worse than useless; they form another class of the tonics of convalescence.

Need it be said that in suggesting a general line of treatment it must, as in the case of every type of disease, be modified according to cases and circumstances? It may be said that I have spoken only of the treatment of the patient who can afford it, and that it is impossible to carry out such a system in the case of the poor man. It must be admitted that in a large number of such instances little or nothing can be done, but in many the goodness of the poor to each other helps us to treat such patients in a more or less satisfactory manner. Were it not that our general hospitals are closed by special regulations against any cases presenting mental symptoms unless they are produced by alcohol, many a case of incipient insanity would be cured, relegation to an asylum would be unnecessary, and the accumulation of pauper lunatics might to no small extent be stayed. I have no hesitation in saying that were wards set aside in each of our general hospitals for the treatment of early cases of Insanity by the ordinary physicians, a vast amount of misery would be relieved, and, what appeals to a large section of the public, the yearly increasing expenditure on asylums would in no slight measure be obviated.

But let the sufferer from incipient Idiopathic Insanity be rich or poor, he must be treated on hospital principles, whether in his own house or in an institution; and he must submit to be placed in the hands of his physicians and nurses absolutely. The treatment may be irksome, but it is not more so than that necessary for the relief of many other morbid conditions. From three to six weeks is generally the time necessary to procure convalescence, and another period of from one to three months may be needed for complete recovery, *i.e.*, before a person is fit to return to regular work. Even then business should be commenced with caution.

Mr President and Gentlemen, I know what I have said as to treatment is commonplace, and I hope you have regarded it as such. I could easily have submitted to you clinical cases illustrative of symptoms, treatment, and results; but it would only have been to ring the changes on the statements made *en masse*. I have endeavoured to give a commonplace description of a commonplace type of disease up to a certain point, bearing on points of its treatment according to their prominence in my own estimation. If I have advanced one argument, or produced one item of evidence, which has enabled any of you to reduce the condition to the ordinary level of everyday disease, to divest it of any mystery hanging about it, or to see that its treatment is not characterized by any inherent difficulty, my object will have been gained. I submit that the view taken of the disease by the profession under the imaginary circumstances which we pictured would have been of the nature I have endeavoured to lay before you. Although the mental symptoms are to the jurist and the citizen the essence of the case, to the physician they are of secondary importance. They are mere incidents dependent on certain conditions of the superior convolutions. Let me adduce a case in point, that of a young man now under treatment whose symptoms ran the following course: gradual but great falling off in bodily health, during which time he was peculiar, restless, irritable, and unable to work; delusion of a religious character supervened; ecstasy; perversion of natural affection; apathetic melancholia; acute mania; and convalescence. This is not a common sequence of symptoms, but its uncommonness strengthens the argument. We have every right to refer the various symptoms to a common cause, and to conclude that they were incidents springing from incidents in the course of the morbid cerebral process. I know my statements as to this point have been much misrepresented. That is a small matter. Symptoms have their own special value, and that a very high one; but they are not the disease. Until the student of so-called "mental disease" estimates their due relation to anatomy, physiology, and pathology, until he determines their proper value in the equations he is daily striving to solve, so will the terms mania, melancholia, and dementia remain undetermined factors, and insanity an empirical expression.

It was my intention to discuss the treatment of active idiopathic mania and melancholia during this course of lectures; but the various demonstrations have occupied so much time that their consideration must be deferred to some other occasion. I submit, however, I have fulfilled the promise made in the first lecture to discuss the treatment of the early conditions produced by over-exertion, starting from an anatomical, physiological, and pathological basis.

IV.—THE ETIOLOGY OF DIPHTHERIA.

By F. P. ATKINSON, M.D., Surbiton.

ACCORDING to recent statistics it would appear that *diphtheria and scarlatina have increased of late years and enteric fever has diminished.* Numerous ideas have been put forward to account for this fact; but allowing the view held by Dr Thorne Thorne be correct (viz., that the germs of diphtheria will not live in moderately pure water), the true explanation, in my opinion, is to be found in the different conditions which tend to bring them about.

Enteric fever and cholera mostly have their origin in water contaminated by decomposing animal matter plus the specific germ. In towns the contamination is mostly brought about by the direct communication of the drinking-water cistern with the W.-C. or drain—in villages by the leakage of cesspools, or the drainage of manure accumulations into wells which supply the drinking water; but, owing particularly to the researches of Sir John Simon, the water-supply of late years has been very greatly improved, and in consequence the deaths from cholera and enteric fever have been very materially reduced. Milk is also liable to be contaminated by water which contains the special germ.

Diphtheria and scarlatina are mostly brought about by the inhalation of sewer gas, which contains the specific germ.

That *diphtheria* is often the result of sewer-gas poisoning, the following cases will show:—In one instance, after noticing the inmates of a particular house were constantly suffering from ulcerated throats, I suggested the drains should undergo an examination at the hands of some competent person, but without effect. As soon, however, as a case of slight diphtheria arose consent was immediately given, and they were then shown to be utterly faulty. Since they were put into thorough order, about two years ago, not a single case of sore throat, according to my knowledge, has occurred.

In the second instance a gentleman who had constantly suffered from ulcerated sore throat was one day attacked with diphtheria. Naturally enough he was anxious to know the cause, and this led me to go over with him the most likely sources from which the poison had been derived. The sanitary condition of his chambers in the city, he told me, was perfect, as an examination had recently been made by a London builder; but this did not satisfy me, and I got him to agree to an examination being made by a properly qualified person. The result was, the soil pipe, which passed through his room, was found to be utterly defective and constantly emitting sewer gas. This state of things was at once remedied, and since that time he has not suffered from any sore throat whatever.

Dr Fischer, in a lecture delivered before the Section of Hygiene, New York Academy of Medicine, November 23, 1892, on "The Results of Examination of Sewer Gas which escaped in Tenement and Private Houses wherein cases of Diphtheria occur," says, "The cases of diphtheria developed by escaping moist sewer gas containing Löffler bacilli seems to have been proven. Out of forty thoroughly conducted examinations, twenty exposures were negative; twelve yielded pathogenic bacteria; eight more pathogenic micro-organisms (principally fæces bacilli), micrococci, and saprophytes, which could not be differentiated. Some of the twelve specimens containing pathogenic bacteria yielded diphtheria bacilli (Klebs-Löffler), one typhoid bacilli in almost pure culture, associated fæces bacilli, and other cocci. In three specimens there were streptococci, and in four staphylococci."

There can be no question that the majority of cases of diphtheria occur in the early winter and spring, and this no doubt is due to two causes:—1. The increased warmth of the houses, brought about, as Dr Fischer says, by the lighting of fires, which draws the sewer gas of defectively constructed houses inwards. 2. The cold, heavy, damp air, which keeps the sewer gas as it issues from the road ventilators down at low levels.

Then, again, these diseases spread by contamination of milk, by direct infection or actual contact, and for the latter method of propagation the children's day-schools are very clearly responsible.

Dr Prudden, the Laboratory Director of the Alumni Association of the College of Physicians and Surgeons, New York, in an article on "The Etiology of Diphtheria," says:—"We thus see that, save for those liable to come into contact with fresh diphtheria exudate, the danger of infection seems largely to limit itself to exposure to dust and dirt, of which the dried exudate forms a part, and this condition of affairs but emphasizes the probability that in the crusade against filth and filth diseases the devotees of cleanliness and prophylactic medicine will find in the immediate future a wide and ever widening field of labour in impressing upon the public the dangers of infectious dust in overcrowded houses and hospitals and filthy city streets, and showing the way in which its evils may be avoided."

Dr Fischer says, "If the expectoration of a consumptive person, as soon as it becomes dry, liberates tubercle bacilli which are capable of producing infection, does any one doubt that a membrane expectorated on to bed-clothes, or on to the floor or carpet, may in a warm room be again liberated and inhaled?"

Dr Klein and Dr Parsons some time ago started the idea that cows suffer from scarlatina and diphtheria, and that these diseases could be conveyed direct through the milk; but this view has been disputed by Dr Löffler, Dr Crookshanks (King's College), Dr Prudden (New York), Principal Brown (Veterinary Department of the Board of Agriculture), Principal M'Call (Glasgow Veterinary College), and the London International Public Health Conference.

Principal M'Call says that those who were inoculated from the cow's teats showed no signs of fever or eruption, and this goes to prove that the ulcers noticed on the udders have nothing of a diphtheritic character about them. Professor Löffler says, "He does not believe that the diphtheroid affections of animals are dangerous to human beings, or that the supposed etiological identity between human diphtheria and similar affections in cats, etc., has been proved." Dr Prudden says, "Animals do not appear to be spontaneously subject to diphtheria as we know it in man; . . . and genuine diphtheria has not, in my opinion, been *artificially* produced in animals."

One curious fact has been noticed with regard to diphtheria, viz., that whereas it used to be essentially a rural disease, of late years it has shown its preference for large towns in spite of the sanitary improvements that have taken place. Of course it must be borne in mind that country districts have also, with the towns, undergone a great change for the better, and farms especially, that now supply London and the large towns with milk, and that used to be hotbeds of infection, are now thoroughly looked after, and the health of the labourers receives every attention. Again, while it is allowed that the sanitary condition of towns has undergone a great alteration for the better, many of what are called sanitary improvements in private houses are only such in name, as they have been carried out by plumbers who have had no real knowledge of their work, and created as many defects as they remedied. Through these defects, the constant communication brought about by railways, the daily association of children at the various day schools, the disease rapidly spreads on all sides. To put any real impediment in the way of its progress, we want a regular systematic house-to-house inspection, and this to be carried out with as much zeal as the Notification of Infectious Diseases Act.

V.—THE SIGNIFICANCE OF THE VENOUS PULSE.

By JAMES MACKENZIE, M.D., Honorary Medical Officer to the Victoria Hospital, Burnley.

(*Read before the Medico-Chirurgical Society of Edinburgh*, 17*th January* 1894.)

THE tendency of the right heart to dilate and to permit a regurgitant stream of blood to flow back into the auricle during systole of the ventricle, when undue opposition is offered to the performance of its work, has long been recognised. The manifestation of this regurgitation has been found in the veins, chiefly in those at the root of the neck. This outward and visible sign of the dilated right heart may be associated with little or no other symptom of heart failure, or it may be a prominent feature along with other symptoms of extreme failure of the heart. The appearance of the movements in the veins are very diverse. Thus there may be but one large wave during a cardiac revolution, or there may be two or three. In the latter case, if the waves be small and the heart beating rapidly, the movements may simulate mere dancing vibrations. When, however, a graphic record is obtained, and these movements are accurately timed, the causes of the individual movements can usually be easily recognised. Thus a wave preceding the carotid pulse can only be produced by the systole of the auricle. In like manner, when a wave occurs in the veins synchronous with the carotid pulse, it can be referred with certainty to the systole of the right ventricle. It frequently happens that when there is a wave in the veins preceding the carotid pulse, and therefore due to the auricular systole, that there is also a wave due to the systole of the ventricle. Its time of appearance is delayed for a longer or shorter interval after the carotid pulse. As this wave is due to blood regurgitating through the tricuspid orifice during the ventricular systole, and as during the ventricular systole the auricle is in diastole and is sucking blood into its cavity, the wave cannot appear in the veins till the auricle is filled. The overplus sent back from the right ventricle then appears as a wave in the veins of the neck. Under circumstances producing incompetence of the tricuspid valves, the blood escapes during the ventricular systole from the ventricle in two directions, namely, through the pulmonary and tricuspid orifices ; upon closure of the pulmonary valves there is a temporary increase in the wave sent back through the tricuspid orifice. This increase of the wave is frequently manifested in the tracings by a sudden rise in that wave which is due to the systole of the ventricle. Indeed, it may be the only part of the ventricular wave present in the veins. Usually the wave due to the ventricular systole is divided into two parts by a notch of varying depth. The bottom of the notch indicates the time of the closure of the pulmonary valves, the part preceding the notch being due to the ventricular systole after the auricle has been distended. The greater the tricuspid incompetence, the sooner will the auricle be filled, and the earlier will this portion of the ventricular wave appear. In cases of heart failure due to organic disease, owing to this great tricuspid incompetence the auricle may be so distended that it apparently becomes paralyzed. Under such circumstances the auricle ceases to manifest its activity by any venous wave, and there is then produced but one wave synchronous with and due to the ventricular systole. Such a wave usually presents a notch indicative of the time of the closure of the pulmonary valves.

The venous pulse may thus be divided into two forms, viz., the auricular venous pulse and the ventricular venous pulse. The first is that form which presents distinct evidence of the functional activity of the right auricle. In this form there is also a wave due to the ventricle, and as it increases the auricular wave decreases and finally disappears, and thus the form called the ventricular venous pulse is developed. The ventricular venous pulse is but a more advanced stage than the auricular; and as during its development there is a gradual fading of the auricular wave, there is a period when such terms do not sufficiently denote the character of the pulse. But the terms are convenient for descriptive purposes. The ventricular venous pulse only appears when there is organic disease of the heart itself (most commonly in valvular disease). When the failure of the heart is functional and not due to organic disease of the valves, the auricular pulse persists to the end.

Similar types of pulses may be recognised in the liver. Here the pulse only appears when there is organic disease of the heart.

In many respects more information regarding the various cavities of the heart can be obtained from the study of the venous pulse than from that of the arterial pulse. Thus during a cardiac revolution the arterial pulse is in free communication with but one chamber, the left ventricle, during but a portion of the time, whereas in the venous pulse we may observe the effects of the right auricle during its systole and during its diastole, while the time of the appearance of the ventricular wave gives us information regarding the degree of incompetence of the tricuspid orifice. We can also gather information regarding the exact time of closure of the pulmonary valves and note the persistence of the ventricle in systole for a short space of time after the outflow through the arterial orifices has ceased. There is also in the venous pulse distinct evidence of the diastole of the right ventricle.

In the study of heart failure the venous pulse affords information of a kind totally different from that supplied by any other means at our command. Thus its appearance, increase, decrease, and disappearance may afford evidences of changes in the blood-pressure quite inappreciable by any signs given by the arterial pulse. While, as a general rule, an increase of the venous pressure implies a diminution of the arterial pressure, this is, nevertheless, not always the case. While one may say that in certain cases the disappearance of the venous pulse is a sign of the restoration of the body to a more healthy condition, yet, paradoxical as it may seem, the disappearance of the venous pulse in other cases may herald a fatal issue. In these last cases there is also a failure of arterial pressure.

In pulse irregularities no true knowledge of the action of the different chambers of the heart can be obtained except by the study of the venous pulse. When, for instance, by means of the clinical polygraph a record is taken at the same time of the venous and radial pulses, we have before us a written account of the actions of three out of the four chambers of the heart. Hitherto it has been impossible to differentiate the nature of the movements in irregular heart action. A study of the venous pulse throws a new light upon the heart movements, and reveals a variety of these hitherto unsuspected.

Part Second.

REVIEWS.

The Hygienic Prevention of Consumption. By J. Edward Squire, M.D., M.R.C.P., D.P.H., Physician to the North London Hospital for Consumption and Diseases of the Chest, etc. London: Charles Griffin & Co.: 1893.

The author of this work attempts to focus for practical ends the results of recent experimental work with regard to tubercular disease. It might have been better, in this view, had the specialized term "tuberculosis" been used rather than the more popular "consumption." For similar reasons, the descriptive "hygienic" seems to us unnecessary. None the less it will be admitted that the volume serves a useful purpose in seeking to systematize the application of ascertained pathological truth.

Exception may, however, be taken to some of the positions maintained in its chapters. Thus the author's views of the relations existing between pneumonia and tuberculosis appear to us hardly to conform with observed fact, and, judging from the context, one might suppose that the broncho-pneumonia which is apt to follow whooping-cough is a subacute variety of lobar pneumonia (p. 47). The statement that "injuries to the lung may induce phthisis, either by the hæmorrhage, or later by the adhesions of the pleura," is open to grave criticism. Similarly, in accentuating the fact that phthisis may occur along with heart disease,—in opposition to some writers who speak as if the latter were exclusive of the former,—Dr Squire seems to us to go too far. It might be assumed from his statement on page 188 that the two conditions were frequent concomitants, which, having regard to the great frequency of the separate conditions, cannot be admitted.

The relation of tuberculosis to alcoholism is but scantily represented. It is assumed rather than tried to be proved that alcoholism is a directly predisposing factor, and certain occupations are cited as "promoting indulgence in alcohol," and as, therefore, presumably liable to phthisis. But the list is a very mixed one. In many instances, such as tailors, painters, shoemakers, etc., other factors of a more urgently predisposing character are present, while cabmen and omnibus-drivers—also included in the list—are, in our experience, though often liberal drinkers, singularly free, as a class, from the tendency to tuberculosis. In detailing the benefits of physical exercise and citing suitable examples of good games as prophylactic agents, there is a curious omission of any reference to golf, which might safely be recommended as of peculiar value. Lastly, in giving tables of relative height and weight, some correction should be allowed for "men" below thirty.

The author accentuates wisely the danger of losing sight of underlying tuberculosis when concluding a diagnosis of anæmia. "The anæmia may be considered enough to account for the symptoms, and no examination of the chest is deemed necessary. It has been stated that consumption is unlikely to occur during the anæmic condition, but this is by no means correct. On the contrary, I frequently meet with early tubercular deposit in cases which were looked on simply as anæmic; and I would emphasize the importance of a skilled examination of the chest whenever the shortness of breath is accompanied with persistent cough, etc." This is one of the most important lessons in the book. The chest should always be examined with care under such conditions, even in the absence of cough.

La Pratique des Maladies des Enfants dans les Hôpitaux de Paris. Par le Prof. PAUL LEFERT. Paris: J.-B. Baillière et Fils: 1893.

IT is often useful to be able to compare the methods of our own practice with those of others, and we may thus gain a greater measure of therapeutic resource when we are met with difficulties which our own routine treatment has failed to overcome. This little book contains a description of the methods of treatment adopted in a number of the diseases of childhood by some of the leading practitioners and specialists in Paris. The diseases are taken in alphabetical order, and under each disease are given in detail the lines of treatment adopted by several leading physicians. In some cases, such as chorea and diphtheria, the methods of upwards of a dozen practitioners are given; in others, those of only one or two. As a book of occasional reference, and as a means of becoming acquainted with the latest French therapeutics in this branch of medicine, this small volume fulfils a useful purpose.

Aids to the Treatment of Diseases of Children. By JOHN M'CAW, M.D., L.R.C.P., etc., Physician to the Belfast Hospital for Sick Children. London: Baillière, Tindall, & Cox: 1894.

THERE may have been a time when a very small book treating of some large branch of medicine or surgery was useful, and this applies especially to diseases of children. But now there are so many good medium-sized treatises on this subject, that books so small as this one are completely out of date. It is avowedly a compilation, and the information contained in it is, generally speaking, concise and accurate so far as it goes, but it is necessarily sketchy and superficial. Thus, in speaking of the treatment of whooping-cough, where, among other remedies, he advises increasing the dose of liq. atropiæ "to 1 or 2 mins.,"—a pretty stiff dose for a child,—he adds, in a separate paragraph, "Morphia is a good remedy." It is irritating to find ipecacuanha always spoken of, except in formal prescriptions, as "hippo."

Surgical Disorders of the Urinary Organs. By REGINALD HARRISON, F.R.C.S., Surgeon to St Peter's Hospital, etc. Fourth Edition. London: J. & A. Churchill: 1893.

THIS edition of a valuable work is all the more welcome that the subject matter has been revised, and embraces much that was not in previous editions—the substance of the Lettsomian Lectures (1888) and Hunterian Lectures (1891) having been incorporated.

The first eleven chapters are concerned with the subject of Stricture of the Urethra,—Chapter V. on Urinary Fever, and the remarks on Internal Division as a mode of treatment (Chapter VII.) being especially interesting.

In Lecture XII., dealing with the subject of Rupture of the Urethra, stress is laid on the importance of perineal incision in all cases where the deep urethra (behind or in the region of the triangular ligament) is injured; by this mode of treatment the exact site and extent of rupture is determined, extravasation is prevented, and the risks of toxic poisoning and stricture are diminished.

Three lectures are devoted to diseases of the Prostate Gland, and the indications for, and advantages of, the various modes of operative treatment in cases of hypertrophy are clearly defined; the advantages of the supra-pubic operation in certain cases are admitted, but the author seems to lean rather to the perineal route in most instances, or when a less radical treatment is aimed at, to perineal puncture, with prolonged retention of a cannula.

The only point in which the lectures are inadequate is in dealing with the surgery of the kidney and ureter, and the omission is made of design. One cannot, however, but wish that the extensive and accurate observation, of which the rest of the work gives evidence, had been also applied by Mr Harrison to this important subject, in connexion with which so many questions are still to be authoritatively decided.

Vesical Calculus is considered in six chapters; the mode of formation of stone in the bladder is described at some length, and the various modes of operative treatment exhaustively dealt with; the operation of perineal lithotrity is very favourably regarded by the author in certain cases, as well adapted especially to old and feeble subjects. Mr Harrison's attitude towards the supra-pubic operation is that it is probably applicable to a majority of the cases in which a cutting operation is called for; the claims of the lateral operation are also fully recognised, but both are to be reserved for exceptional cases, lithotrity being the operation of choice. In supra-pubic cystotomy the author sees no reason for the use of a rectal bag, unless it is found impossible to reach the posterior bladder wall sufficiently without its presence. In regard to the question of suture, a middle course is advised, the bladder wound being left, and the superficial wound stitched in part, a double drain being inserted; if the bladder wound be stitched, then perineal puncture is advocated.

A very interesting lecture is found in Chapter XXXIII., dealing with Tumours of the Bladder and Prostate, and in this relation the value of cystoscopy as a means in diagnosis is acknowledged.

The last chapters deal with malformations of the urinary organs and some diseases of the external genital organs.

Throughout, the lectures are very readable, and keep one thoroughly in touch with the clinical side of the subject-matter, notes of illustrative cases being frequently given. The symptomatology and modes of examination of the urinary organs are fully and clearly detailed, and the indications for the various operations and their technique is entered into with precision.

Although based on previously published works and papers, the present volume is a useful and valuable contribution to the literature of the subject, and will repay perusal. The text is accompanied by very numerous and excellent illustrations, the name of the publishers being a guarantee for the quality and appearance of the work as a whole.

Surgical Treatment of Deformities: Two Post-Graduate Lectures. By WM. ADAMS, F.R.C.S. London: Baillière, Tindall, & Cox: 1893.

THIS little volume contains, as we would expect, many useful hints as to the management of various common deformities. The author makes out a good case in combating the proposed abandonment of subcutaneous tenotomy for an "open wound" operation, followed by immediate rectification of the deformity. The remarks on the forcible straightening of contracted joints are also suggestive.

The second lecture is devoted to the surgical treatment of deformities due to paralysis, and is thoroughly practical and well worthy of perusal.

The lectures have previously appeared in print, but are now very properly produced in permanent form in this nicely got up pamphlet.

Sprains; their Consequences and Treatment. By C. W. MANSELL MOULLIN, M.A., M.D. Oxon., F.R.C.S., Surgeon to the London Hospital, etc. Second Edition. London: H. K. Lewis: 1894.

THIS second edition has been revised and partly rewritten, and yet by the omission of certain matters belonging to the general principles of surgery has not been enlarged, but actually somewhat condensed. Among the many excellent points the author has emphasized, one at page 23 deserves special attention. He points out that in some bad sprains everything that holds the joint together except the skin may be torn as in a dislocation. "The injury in many cases is really as great; the bones are wrenched apart from each other at the moment of accident, only, instead of being caught and held as they are in a dislocation, they fall back again of themselves into their natural position." Certain lines of treatment are suggested,—slight sprains should be treated by massage at once, more severe ones by cold, but not the absurdly misnamed cold of a wet bandage, which soon becomes warm and acts as a poultice, but by constant douching with cold spring water; after copious douching, regular and skilfully applied pressure by pads of cotton wool carefully bandaged. In the treatment of the results of bad sprains adhesions may have to be broken up scientifically and cautiously, yet with sufficient force really to break them. What the bone-setter does in ignorance, sustained by self-conceit, the surgeon can do better by knowledge; and after adhesions are broken, then comes the time for the wise selection of massage manipulations and electricity.

Much information on all these subjects is pleasantly given in this little book. Lawn-tennis leg, rider's sprain, and other oddly-named and characteristic kinds of injury are described minutely, and the treatment recommended is both simple and sensible.

Headache and other Cephalic Sensations. By HENRY CAMPBELL, M.D., B.S. (Lond.), Physician to the North-West London Hospital. London: H. K. Lewis: 1894.

DR CAMPBELL has produced a very voluminous treatise on headaches, extending to nearly 400 large pages. He has levied contributions from Hippocrates and Galen onwards with even more than usual prolificness, but has, notwithstanding, written a useful book on the subject. After a consideration of the anatomical seat of headache, he proceeds to discuss its causation, into which he enters very fully,—so fully, indeed, that there is little left for us to say than to recommend those who wish to know all about the causes of headache, probable and suppositious, to read this part of the book with care. Only one thing we might allude to, and that is the large bulk to which Haig's uric-acidæmia attains as the cause of headaches. The symptomatology, however, is extended to such a length as often to be positively wearisome. Dr Campbell has founded his book on observations made on nearly 1300 cases of headache, but he might have spared his readers the individual description of nearly each patient's symptoms. For instance, he tabulates cases in which the patients complain, one of pain which resembles "having been beaten with a stick," another "having been thumped," another "having had a blow," and so on *ad infinitum*, all similar, yet carefully catalogued. In that part of the volume devoted to treatment, we are glad to see that the necessity of exercise is strongly insisted on, especially in sick headaches. We have ourselves found that exercise pushed to the point of fatigue relieves the tendency to megrim better than anything else. Copious references to the action of different drugs on headaches will be found chronicled in full towards the end of the book.

On the Influence of Various Diets upon the Composition of the Urine and the General Condition of Patients suffering from Chronic Bright's Disease. By W. HALE WHITE, M.D.

IN this paper, which is a reprint from the *Transactions* of the Medico-Chirurgical Society of London, the author takes up the much-vexed question of the influence of diet on the excretion of albumin in chronic Bright's disease.

Having first glanced at the literature of the subject, eight cases of chronic interstitial nephritis on various diets are carefully analyzed as regards the amount of urine passed, its specific gravity, the amount of albumin, the urea, and the general condition of the patient. In every case the diet is given a fair trial. In all the eight cases the patients felt better and stronger on a full diet than on milk or farinaceous diet. On a full diet in some cases there was increased excretion of albumin; but this, the author maintains, was compensated for by the increased amount of proteid absorbed by the alimentary canal.

The observations on the urea are not satisfactory, as the author admits, for, as in most clinical observations, the secretion of nitrogen is estimated without any definite knowledge of how much is being taken by the mouth.

The paper, as a whole, is a careful piece of work, and we would heartily recommend its perusal to those physicians who habitually starve their cases of chronic Bright's disease.

Science Progress: A Monthly Review of Current Scientific Investigation. Edited by J. Bretland Farmer, M.A. Vol. I., No. 1, March 1894. London: The Scientific Press, Limited.

This new Review aims at giving scientific workers reliable information of the effective work that is being accomplished in the various branches of science. The first monthly number contains articles on various subjects, all of which are of a high order. The progress of Chemical Physiology during the past year is reviewed by Prof. Halliburton; the origin and nature of certain Bacterial Poisons by G. N. Buckmaster; Vertebrate Morphology by Prof. Howes. All the seven articles, though not of a "popular" nature, can be read with interest by any person possessing an ordinary scientific education.

The Review should supply a deficiency even in the present days of elaborate journalism. The names of its editorial committee and the future contributors are a guarantee that its high tone will be maintained.

The Law of Scotland in relation to the Presumption of Life of Absent Persons. By J. H. Stevenson, M.A., Advocate. Edinburgh: Green & Sons, Law Publishers: 1893.

One or two points in this very painstaking analysis of the law in relation to presumption of life in Scotland as contained in the law of 1891 are interesting to medical men, in so far that they have often to give an opinion concerning the probability of the continuance of life in absentees. Seven years is the time ordained to elapse before the machinery of the Act can be set in motion. This does not apply to insurers and claims against insurance offices, which still fall to be decided under the common law, the various points in which are advanced in a clear and capable manner, and can even be understood by the non-legal mind.

Many interesting instances of absenteeism are given, and the book ends with extracts from the Continental law on the subject.

Burdett's Hospital and Charities Annual, 1894. Containing a Review of the Position and Requirements, and Chapters on the Cost of Management, of the Voluntary Charities, and an Exhaustive Record of Hospital Work for the Year. It will also be found to be the most Useful and Reliable Guide to British, American, and Colonial Hospitals and Asylums, Medical Schools and Colleges, Religious and Benevolent Institutions, Dispensaries, Nursing and Convalescent Institutions. Edited by HENRY C. BURDETT, Author of "Hospitals and Asylums of the World," etc. London: The Scientific Press, Limited: 1894.

THIS title-page, which we have quoted in full, describes very fairly the range and aim of this admirable "year-book of philanthropy." Its editor's name is well known. He is probably the greatest living authority on hospitals and asylums, and the very special information he gathered with such labour for his immense work on the "Hospitals and Asylums of the World," enables him with comparative ease to make sure that this hospital directory is trustworthy and up to date. Where nearly everything is so correct and in such good proportion, we would call the attention of the editor to the exceedingly meagre notice, on page 22, of the School of Medicine at Surgeons' Hall, and to the entire omission of the Chambers Street Medical College for Women. Perhaps the latter omission is scarcely to be wondered at, as no one would expect that two separate schools for women medical students could exist in Edinburgh.

The Physician's Wife, and the Things that Pertain to her Life. By ELLEN M. FIREBAUGH. Illustrated with forty-four Photo-Engravings of Sketches from Life. Philadelphia: The F. A. Davis Co.: 1894.

HOW any sane woman who could do better can ever make up her mind to marry a doctor is a grave question, the answer to which may be found in the beautiful spirit of self-sacrifice so common in women. Irregular meals, disturbed nights, few holidays with her husband, in the great majority of cases an ill-paid and over-worked partner, do not make up a pleasing prospect. Still, doctors get wives, and the husband of this wife has, we think, secured a treasure, unless her book bears false witness. Cheerful, good-humoured, with a fine sense of literary flavour and plenty of mother wit, she can both make and understand a joke. It is a pleasant book to read, and contains in simple words much excellent sense.

With great wisdom she insists that the doctor should never tell his wife about his patients' cases. He does not want her to talk shop to him, and his patients' cases must be told to none. The endless mischief a gossiping doctor's-wife can do is incalculable. With equal consideration and forbearance she allows that while all men are absent-minded and forgetful and cause a world of inconvenience to their wives, the doctor has a better excuse for his absent-mindedness than most men.

Many of the little episodes in the country doctor's life described in the book are so purely American as hardly to come home to the Scotchman. One very curious difference we may note. Our authoress hardly believes it possible that "there should ever be a physician's wife courageous enough—or foolish enough, whichever you please—to confess to her husband that she wants some other doctor to attend her when she is sick (as yet I have never heard of her)." Here, at least in this town, no physician is so brave as to dare to attend his own wife in any ailment, except, perhaps, the most trifling one. The doctor's bill is treated of from the doctor's wife's point of view, and it certainly is a most pessimistic one. If things in America are as bad as she makes them out, we may just wrestle with the east wind and the Shorter Catechism and be thankful.

We conclude with one valuable lesson to all of us who are blessed with wives. "Doctor, when the weather is fine and the roads are good, do not wait for your wife to ask you now and then if you are going to the country to-day, and if it would be agreeable to you for her to accompany you. While you may answer 'yes' with alacrity, it will still not be quite so pleasant to her as if the suggestion had come from you."

A Guide to the Public Medical Services. Compiled from Official Sources by A. S. FAULKNER, Surgeon-Major. London: H. K. Lewis: 1893.

THIS brochure can be recommended strongly. It gives all the requisite information, and will act as a good guide to all the services. We especially commend it to students at the end of their course, and to recent graduates. The author has rendered a distinct service by publishing this handy guide.

Ship Owners and Ship Surgeons. By C. H. LEET. Liverpool: Seaforth: 1893.

WE only notice this pamphlet in order to call attention to the very unsatisfactory state of the British merchant navy with regard to their medical officers, and in the hope, slight though it may be, that the directors of the great ocean shipping lines may place their medical officers on a better footing. It is a scandal that they are treated as they appear to be, and that, would they pass a comfortable existence, they must act in a way which we consider absolutely derogatory.

Ladies at Work: Papers on Paid Employment for Ladies, by Experts in the several Branches; with an Introduction by Lady Jeune. London: A. D. Innes & Co.: 1893.

Whether wisely, from the point of view of their sex or not, still it is the fact that the women have come to the front in much of the work of the world, and having come they mean to stay. This little book, which consists of papers reprinted after revisal from the *Monthly Packet*, describes briefly and superficially certain of the employments most sought after by women. Lady Jeune's introduction is written on the basis of considerable knowledge with enthusiasm and yet with sense. Possibly she is optimistic in speaking of the "laurels" women have won in medicine, and she is certainly rather down on the medical profession when she states that "all the prejudice and influence of a powerful and narrow class were brought to bear in opposition." In Edinburgh at least twenty years were lost to the cause of medical education of women by the high-handed methods, not of the opposition, but of the supporters of the movement. The paper on the Women's Medical Work in India is rather behind the times as to the education in Edinburgh, as it does not tell of the wards which, by the wisdom and liberality of the managers of the Royal Infirmary, have been devoted to women's education in medicine and surgery.

The article on Hospital Nursing is an admirable one, and does not exaggerate the splendid work done by women in the wards, both in the treatment of the sick poor and also (though this is less insisted on) in the training of women for the nursing of private patients. The wildest opponent of women's work cannot say a word against the sick-room and the hospital ward as proper spheres for women; and year after year the education, the status, and the character of the trained nurse is rising. Lady Clifford's article on the Care of Insane Patients is also an excellent one on a kind of work which has only recently passed into the hands of educated women, and this to the great advantage of the educated and cultured lunatics of the same sex. While we have specially noticed the articles interesting to the readers of a medical journal, we have to praise the substance and manner of the whole of this useful book. One misprint we must nail to the counter: on page 5 Lady Martin's maiden name is spelt Fawcett!!!

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LXXIII.—MEETING VI.

Adjourned Meeting.

Friday, February 23, 1894.—Mr Joseph Bell, *Ex-President, in the Chair.*

The Chairman explained that the meeting was for the continuation of the discussion upon intra-cranial surgery, and the demonstration of specimens bearing on the subject.

I. Exhibition of Patient.

Dr Smart showed a woman who had been TREPHINED for BASAL CEREBRAL HÆMORRHAGE, and whose case had been referred to at the first meeting of the discussion.

II. Discussion—*continued.*

Prof. Chiene spoke and demonstrated his method of Cerebral Localization on the Skull (see page 1065 of this Journal).

Mr Stiles demonstrated Kocher's method of Cerebral Localization.

Mr C. W. Cathcart said that for some time he had had the same view as Prof. Chiene, that it was very important that they should use natural marks on the skull, and not require to take measurements and draw angles. But Prof. Chiene's method, and that of Kocher described by Mr Stiles, would certainly, he thought, be very difficult to recollect. The method which he had worked out had only one measurement, and he believed it was sufficiently accurate, for he had verified the results upon Prof. Cunningham's models. The measurement that he took was that required to find the upper end of the fissure of Rolando, which, according to Prof. Thane, was half an inch behind the mid-point of a line extending from the glabellum to the external occipital protuberance. The other points he took were the external angular process of the frontal bone, and the zygomatic tubercle. A line drawn from half an inch behind the mid-point to the zygomatic tubercle gave the direction of the fissure of Rolando. A vertical line from the same tubercle struck the fissure of Sylvius at the point where its vertical branch began to show on the surface. The position of the fissure of Sylvius could always be ascertained on the dried skull by holding it up to the light, as there was a natural ridge of bone corresponding to it on the inner side. He had found that starting $1\frac{1}{2}$ inches behind the external angular process of the frontal bone, the first part of the fissure of Sylvius ran upwards and backwards parallel to the lower border of the zygoma as far as the mastoid process. Behind that its position was very variable. The parallel fissure could be marked out parallel to the fissure of Sylvius and an inch below it. The fissures of the frontal lobe ran at equal distances, a little in front of the fissure of Rolando. By this method, which was easily remembered, they could get sufficiently accurately the position of the main fissures, and other points in the surface of the brain could also be easily determined. The lower part of the temporo-sphenoidal lobe ran parallel to the zygomatic arch. That line, continued backwards, hit the upper part of the lateral sinus. The position of the middle meningeal artery before it spread out very nearly corresponded to the place where the vertical portion of the fissure of Sylvius began. Mr Cathcart then showed a number of preparations illustrating certain points in the surgical anatomy of the cranium, and also some pathological specimens.

Mr Caird referred to several cases and showed Preparations illustrative of Cerebral Surgery. He said that he regarded Thane's measurement as the most practical for cerebral topography. In regard to epilepsy, he believed that the most encouraging results were obtained in traumatic cases, and that before having recourse to the trephine where there was no evidence of a coarse lesion, the question of nerve-stretching should be discussed. Bearing on the results gained by electric stimulation of the cortical areas in epilepsy, he had met with two interesting cases. In one, on trephining and stimulating over the hand area of a boy who suffered from infantile hemiplegia with idiocy, he found that only a limited portion of the exposed cortex gave any reaction, and the reaction, curiously enough, was one in which apparently all the muscles supplied by the ulnar nerve, *and no others*, were thrown into spasm. The second case, where in like manner the hand area was stimulated, gave no response whatever, either to weak or strong currents, but that the correct area had been struck was shown by the subsequent paralysis of the hand and arm. The motor centre was removed in the first case, and in the second nothing was taken away. In each a temporary paralysis ensued.

Mr J. M. Cotterill thought that Prof. Chiene's dictum "that none but traumatic cases of epilepsy should be trephined" was too strong. If in so-called idiopathic cases there were distinct localizing symptoms (and especially in cases where there was paralysis of arm, leg, etc.), it was right to trephine, *in order to stop the fits*, when all other forms of treatment had been tried and had failed to give relief. Not only was it impossible to absolutely exclude traumatism in many so-called idiopathic cases, but it was by no means an impossibility that in idiopathic cases the hæmorrhage might be on the surface of the brain, and prove the starting-point of subsequent irritation. And, again, where paralysis already existed, the operation might all the more properly be done, as the removal of an affected centre would not in such a case alter the usefulness of the arm or leg, and might be followed by a cessation of the fits. Whilst admitting the ingenuity of Prof. Chiene's and Prof. Kocher's methods of cerebral localization, Mr Cotterill strongly agreed with those who thought such rules rather elaborate for clinical use; and he hoped that Prof. Chiene could give the Society some more ready method, built up upon his more elaborate plan, which might be sufficiently accurate for use in the operating theatre. Having related a case in which he had tapped the lateral ventricle and withdrawn some 3 ounces of cerebro-spinal fluid, Mr Cotterill referred to the difficulty of continuous and slow drainage of the brain cavity, and suggested the possibility of drainage being carried on in some cases by a tube inserted into the anterior end of the lateral ventricle. Mr Cotterill then showed some instruments he had had devised for the purpose of throwing down a large flap of bone from the cranium, retaining its connexion with the skin and peri-cranium. The object of this was to enable a surgeon to lift a large flap of bone without destroying its vitality. The method consisted in making a large omega-shaped skin incision (much as recommended by Uhle, Horsley, Dawburn, and others), but it differed from their procedures in not only cutting through the line of bone exposed by this incision, but also sawing through the neck of bone, both from without inwards, by lifting the pericranium and skin and inserting a fine saw, and also by boring obliquely through the whole thickness of skull at each end of this neck of bone, passing in a fine chain saw, and dividing the bone from within outwards, after first passing a curved grooved director from one of these holes to another, in order to separate the dura mater from the bone and to hold it down out of the way of the saw. The section of the rest of the large circle or parallelogram of bone was performed by a circular saw fitted to an electro-motor or dental engine; and Mr Cotterill recommended that this section should be made, not at right angles to the surface of the cranium, but obliquely, at the expense of the inner table of the piece of bone lifted up, so that when it was put back in place it would not tend to fall below the level of the surrounding bone.

Mr A. G. Miller showed Preparation, and gave a synopsis of the following case:—

J. H., æt. 26, servant; admitted 28th February 1893.

Complaint.—Pain on right side of head.

History.—Ten years ago had discharge of pus from right ear; recurred one year ago. Discharge foul. Three weeks ago pain in head severe, and discharge copious; vomiting occasionally when pain most severe.

On admission patient was flushed, restless, thin, and worn-like, suffering from intense pain, but in full possession of senses. Right side of head painful, but without any specially tender spot. Pulse 44; temperature subnormal.

March 2.—Mastoid antrum opened by Mr Miller. Bone much sclerosed; very little pus found.

After operation pulse rose from 44 to 66, and headache became less severe.

March 4.—Pain referred to occipital region mostly; became very drowsy in evening. Temperature, which had been subnormal, rose to 99°·6 F., and breathing became almost stertorous.

March 5.—Mr Hodsdon trephined first over temporo-sphenoidal area, and then over cerebellar area. In neither region was any abscess found, but a short time after some pus was supposed to have discharged itself from the former opening. The patient improved somewhat.

March 29.—Patient had twitchings of right arm and leg, which continued till April 4, when she had general convulsions, with opisthotonos.

After this patient gradually improved, and was sent out June 3rd, 1893, in good health, but with a sinus still discharging very slightly from the anterior trephine opening.

(*N.B.*—All the wounds were septic from the first, on account of their original connexion with the septic middle-ear disease.)

Dec. 3, 1893.—Patient had "a fit" at home, and was brought at once to the Infirmary. The sinus was opened up, and a drainage-tube inserted. Patient much relieved.

Jan. 19, 1894.—Temperature fell to 97° F.; on 24th, rose to 99°·8 F., accompanied by severe headache.

On 25th, Mr Miller passed a probe into the sinus inwards and backwards for about 2½ inches, when pus began to flow. There was subsequently a copious flow of clear fluid—cerebro-spinal probably. He then inserted a tube. Patient was much relieved for a day, when temperature rose to 103°·6 F., and she began to scream with pain. She had also loss of power in the left hand.

On consulting with Mr Duncan, it was decided that the neighbourhood of the sinus should be explored. Mr Miller accordingly removed a large circle of bone over the arm centre. On removal of the bone the dura bulged considerably. On cutting the dura the brain substance (after a considerable flow of cerebro-spinal fluid) rapidly protruded itself. Mr Miller inserted a probe-pointed bistoury in the sinus and slit up the brain substance, which was found to be very soft. No special abscess cavity was found, but the sinus was easily traced for about two inches, being lined with a pyogenic membrane. The wound was dressed with iodoform gauze. The patient was much relieved, but the left arm was completely paralyzed. On the day after the operation patient became drowsy, and gradually passed into a state of coma, and died on 30th January 1894.

Post-mortem.—Dura mater tense; large hernia cerebri on right side; no meningitis visible. On slicing the brain, pus was discovered in the right lateral ventricle, and was traced into the third and fourth ventricles. A connexion was made out between the posterior horn of the right lateral ventricle and the softened and suppurating brain substance in neighbourhood of operation wound. The right lateral sinus was obliterated and converted into a fibrous cord. Near the jugular foramen was an organized thrombus, about the size of a bean, in the sigmoid sinus, probably the result of thrombosis caused by former middle-ear disease.

Mr Miller said that he had contributed this case because he thought it interesting and important for two reasons:—(1) The case was an example of a temporo-sphenoidal abscess bursting into the lateral sinus; (2) of lateral sinus thrombosis, ending in obliteration of the sinus without suppuration.

Mr Hodsdon said he had three Specimens to show. Two were from cases of abscess, and the third from a case of sinus phlebitis. In the last, which occurred eighteen months ago, the sinus was opened and the internal jugular vein tied for the first time in Edinburgh. The patient was advanced in pyæmia, and died in consequence. The source of the mischief was found to be perforation in the roof of the tympanum. Mr Miller had at present in his wards a case of sinus phlebitis in which the same thing had been done on the second day. The patient suffered from chronic pyæmia for a time after the operation, but everything was now going on well. The question in these cases was the advisability of tying the internal jugular. He thought it added little to the danger of the operation of opening the sinus, though Macewen was against it, and said that it did not prevent the risk of pyæmia. The wound, however, was almost certain to become septic.

Dr George Mackay said that there was a good deal that might still be said as to the value of the eye symptoms in relation to cranial operations. He would like to emphasize Dr Bramwell's remark that there was the strongest evidence that the operation of trephining for intra-cranial tumours relieved the optic neuritis and other urgent symptoms, even though the tumour could not be removed. It was only syphilitic and tubercular lesions that drugs might cure, and even in these optic atrophy was very often the sad accompaniment of restored general health. The serious question came to be, How long should one wait before adopting operative procedure? Dr Victor Horsley had recently laid down the statement —and he wished that the surgeons present would bear in mind and test it—that one should not wait longer than six weeks in trying to relieve syphilitic conditions by drugs, and not longer than two months in tubercular conditions.

Mr David Wallace said Dr Mackay had alluded to one of the questions he had proposed to bring before them, namely, How soon should operative procedure be had recourse to in marked intra-cranial pressure probably due to a tumour, whether in the nature of a neoplasm, a syphiloma, or a mass of tubercular material? Dr Mackay had said it was a question for the surgeons to consider. He thought it was a question for the physicians to consider. He had seen many cases which had been treated for a long time before a surgeon was called in, and in which operation had been too long delayed. For how long might optic neuritis persist before atrophy occurred with consequent blindness, was a question difficult to answer, but of the highest importance. Delay in operation might mean, that although the cause of the neuritis was removed blindness was permanent. It had been recently contended that there were certain baneful ulterior effects from operative procedure upon the cranium and cranial contents. The argument was being advanced—and it was supported by some eminent physicians—that in certain cases surgeons produced by their procedure similar conditions to those for which they operated at other times. For example, it had been shown that the removal of a painful cicatrix might relieve epilepsy. Now, it was said that when a surgeon cut down to remove an epileptigenous centre he not only formed a scar in the scalp and in the dura, but he also made an actual cicatrix in the cortex. In the former cases, however, the epileptiform seizures were probably brought about by adhesions or by pressure upon the nerve terminations, and these were conditions which could be relieved by surgeons, and which were not left by them in their operative work if the wound was kept thoroughly aseptic. He had noted that in cases of general paralysis operated upon no adhesions took place between the cortex and the dura. This was a point of great importance. If the wound was kept aseptic only a linear cicatrix would be left in the scalp, the calvarium would remain smooth on its inner surface, and the scar in the dura, if the edges had been drawn accurately together, would be very small, and no adhesions were formed. He therefore did not think that in epilepsy operative procedure should be restricted merely to the cases in which there were the coarser lesions. He had on four different occasions removed portions of the cortex in Jacksonian epilepsy after stimulation by the Faradic current. He used ordinary electrodes, which he heated in a flame, and then dipped in sterile water. These were applied when the current was just strong enough to be felt on the tongue. One stimulation was sufficient to give rise to one movement. If the electrodes were applied for some length of time the movements tended to become clonic; and in one case, when kept on still longer, a distinct epileptic fit was produced. During stimulation he met with silent areas of various sizes. One was as large as a florin. He removed the portions of cortex simply with a knife and Kocher's forceps. There was afterwards paralysis and numbness in the corresponding area of the limb. He believed that this was recovered from. One of his cases had been attended with remarkable success. The patient had been incapacitated from his work for two years, partly by epileptic fits and partly by periods of excitement. There was a distinct area of numbness and tingling in the little and ring fingers of the left hand. He was certified as insane and sent to an asylum. He was there operated upon, and the epileptigenous area was removed. A year and a half had now elapsed, and he reported himself in good general health, having had only one fit, which occurred during the night in July last. He was now regularly at work as a tram conductor, working sixteen hours daily.

Prof. Annandale, in reply, said that in winding up this important debate, he thought he was entitled to say that it had been a success, and he desired, in the name of the Society, to thank all those gentlemen who had so ably taken a part in it. The discussion had resulted in bringing many valuable pathological and clinical observations, experiences and opinions, and important suggestions in connexion with the topography of the brain before the Society, and all of these would, he felt sure, be useful as guides and encouragements in connexion with future intra-cranial surgery. It would detain the meeting much too long if he criticised all the various remarks which had been made, but he would endeavour briefly to refer to some of the more important points which had been brought out or emphasised in this discussion.

First.—He would refer to the cases of living patients shown to the meeting upon the second day of the discussion. The patients shown by Mr Cathcart, Dr M'Bride, Dr Johnston, Dr MacGillivray, Mr Milne, Dr Stewart of Leith, Dr Macpherson, Dr Gibson, Mr Caird, Dr James, and himself were all illustrations of the present practice in connexion with intra-cranial surgery, and, he thought, were also encouraging in connexion with the continued advancement of this branch of surgery. The very interesting observations of Dr James and Dr Milne Murray on temperature in connexion with the case of epilepsy shown would, he hoped, be continued as opportunities occurred.

Second.—The Pathological Specimens. Mr Cathcart showed an interesting specimen of temporo-sphenoidal abscess. Mr Caird's specimens illustrating cases of hæmorrhage from middle meningeal arteries, and also one illustrating suppuration the result of injury, were very interesting. Mr Miller's preparations were also of much interest. Dr Hodsdon's preparations, one of which was an example of ligature of the internal jugular vein in connexion with sinus thrombosis, were important additions to pathology.

Third.—The Clinical observations which had been submitted in this discussion were of great practical value. In this department he would refer to the clinical experience recorded by Prof. Grainger Stewart, whose suggestions in connexion with intra-cranial surgery, founded upon pathological and clinical experience, were made many years ago, and he had, therefore, the credit that his views were in advance of the times. Dr Carmichael's observations in connexion with the earlier operative treatment of hydrocephalus were well worthy of consideration, and Dr Smart's well-known cerebellum case, so successfully diagnosed and so successfully treated by Prof. Chiene, was a proof of what might be done by operating in similar cases. Dr Bell's note of his surgical operation upon a case of microcephalus gave us encouragement to persevere in treating such cases surgically. Dr Ireland's courteous criticism upon this subject deserved attention, owing to his valuable experience of this condition. His contention as to the present unsatisfactory results obtained in the operative treatment of cases of imbecility was correct. At the same time he was still inclined to hold to his opinion that the success of such operations had been *fair* in so far that it might be considered a justifiable procedure in cases otherwise hopeless of relief. The Society would, he was sure, join with him in admiration of Dr Byrom Bramwell's contribution to the debate. The tabulation of his large experience in connexion with cerebral tumours was of great value; and although his statistics show that a very small percentage of brain tumours admit of successful removal, he was glad to note that he advised operative interference in cases unrelieved by other means, because such operations often gave temporary relief, and also relieved optic neuritis even if the tumour was not a removable one. Dr Bramwell's suggestion in regard to operative interference in tubercular meningitis, and in some cases of uræmia, was well worthy of the surgeon's consideration, as this and others of his suggestions for justifiable surgical proceedings were founded upon sound clinical and pathological experience. Dr Argyll Robertson, who unfortunately did not have an opportunity of speaking at the last meeting, asked him to confirm the fact that relief was afforded in optic neuritis by trephining. His explanation of the occurrence of optic neuritis in intra-cranial conditions was that the pressure, although it might affect other cranial nerves, most frequently affected the optic nerves, owing to the dense, inelastic sheath which surrounds these nerves, which are also traversed by dense septa passing through them. Dr Mackay had also expressed a similar opinion. Mr Duncan's philosophical and scientific remarks and the practical conclusions drawn from them must, he was sure, have impressed the Society. One value, in his opinion, of these remarks, is that surgeons will, as he (Prof. Annandale) suggested in his opening address, before practising intra-cranial operations, carefully consider the different cerebral elements and the different circumstances—physiological, psychological, clinical, and pathological—which might singly or together be present and producing symptoms. He was perfectly in accord with him in regard to the importance of drainage when there was either a general or local increase of fluid causing intra-cranial pressure or other symptoms; and he admitted that surgeons had still to find some safe and efficient method of carrying out this principle. Prof. Chiene's clinical experiences in epilepsy, tumour, and abscess were valuable, as the result of practical experience. He was glad that he (Prof. Chiene) approved of early operation in suppuration the result of ear disease, and also approved of operation for intra-cranial pressure. His suggestions upon cerebral topography were also well worthy of consideration, as they were founded upon sound anatomical knowledge. Mr Stiles' demonstration upon Kocher's cerebral topography was most lucid and interesting. Mr Cathcart's remarks upon brain topography were also very interesting, as they were the result of careful observation, and the casts of the interior of the skull which he showed were likely to be most useful to the surgeon in connexion with operative procedure. Mr Cotterill, he was happy to think, confirmed his opinion that in aggravated cases of idiopathic epilepsy operative interference was admissible and justifiable. His suggestion in connexion with raising a flap of bone so as to expose some portion of the brain was ingenious, and well worthy of consideration by surgeons.

The contributions to special intra-cranial surgery have also been of much interest. Dr M'Bride in his remarks confirmed the general opinion that intra-cranial suppuration from ear disease was not always easily diagnosed, and he gave an interesting description of the operation for treating middle-ear and mastoid suppuration according to the method of Staphi; and he showed a patient upon whom he had successfully carried out the operative procedure. He (Prof. Annandale) thought there could be no doubt that this class of cases should be treated early when symptoms were present, and if suppuration was not met with in the mastoid antrum or cells, the skull should be at once opened, and, if necessary, at more than one point. Mr Berry's experience in regard to the rarity of optic neuritis in intra-cranial abscess was well worthy of note, as it might assist in distinguishing this condition from others,—such, for instance, as tumour, in which optic neuritis was common. Dr Tuke's remarks in connexion with the treatment of general paralysis by operation certainly encouraged the surgeon to operative procedure, but he admitted that such operating should be in the early stage of the disease, and should be accompanied with safe and continued drainage. If he understood Dr Tuke rightly, he made some objection to the use of the term intra-cranial pressure. He employed this term as a surgeon, and meant by it the conditions in which the cranial cavity was encroached upon by solids or fluids, so as to compress more or less of the brain substance, and produce symptoms. Such symptoms might be temporary or continuous. In the former, Nature has relieved the condition by its powers of compensation or absorption. In the latter, Nature might be unable to so relieve, and it was for the surgeon to help her to do so by operation whenever it seemed possible. Their

President was not so sanguine as to the good results of operative interference in this affection, as his views in regard to its pathology differed from those of Dr Tuke, but still he expressed the opinion that an operation might be justifiable if the symptoms were aggravated. A hint, the result of his large clinical experience, deserves careful attention, namely, that a temporary but marked improvement takes place in some of these cases in which no operation has been performed. Dr Clouston also expressed the opinion that in a certain number of insane people intra-cranial spiculæ of bone or other forms of bony growth developed, and that this was a cause of the mental trouble, and that if these could be removed the mental state might be relieved. Their President also expressed the opinion that even in some cases of acute insanity, operative interference might be useful as a counter-irritant, but he (Prof. Annandale) noted that he cautiously guarded this opinion by remarking that surgeons must first prove that the operation is without risk. He thought he could agree with him, in the name of surgery, that such operations have now the minimum of risk if performed with careful antiseptic precautions.

In conclusion, it had been a great pleasure to him that the discussion had tended to confirm the opinion expressed by him in his address, that intra-cranial surgery had a future, and that intra-cranial surgical procedures, as a means of diagnosis and treatment, would be more frequently resorted to, and would become more successful as their knowledge of the causation and progress of brain conditions increased. Careful records of the experiences and results of the various surgical operations performed for intra-cranial conditions would add much to such knowledge; and whether such operations were successful or not, it was to be urged that all of them should be honestly reported, so as to accumulate evidence for or against surgical interference.

The Chairman said that Prof. Annandale's remarks had been a most fitting termination to a most interesting discussion. He asked Prof. Chiene to answer Dr Cotterill's question as to his opinion about depressed fracture.

Prof. Chiene said he could not recall a case in which depression of bone had produced symptoms. He divided compression into three great divisions,—primary, reactionary, and inflammatory. Compression due to depressed fragments was to him an unknown quantity. When a patient came into the hospital with depressed bone and symptoms of compression, he would recover from the symptoms of compression if they waited long enough.

Mr Cathcart asked if depressed fragments might not be a cause of inflammation?

The Chairman said that while agreeing with Prof. Chiene that his pathology was correct in many of the cases, he must say that he had seen cases in which the depressed bone was the cause of the patient's symptoms, and in which the removal of it relieved them.

Dr D. W. Johnston has furnished the following Synopsis of Cases of Cranial Injury, which he was unfortunately prevented from reading to the Society during the discussion:—I do not intend to attempt to tell you anything new about brain surgery, or to describe the technique of cranial operations. The following cases, however, which I wish to record, will serve to show the extent to which the brain may be injured and complete recovery take place. Most of the cases of fracture were compound, comminuted, and depressed, and in a suppurating septic condition when brought under my care. My experience of the smell of intra-cranial septic pus when it is evacuated is that it compares favourably with, if it does not beat, the worst smelling ischio-rectal or buccal abscess I have ever had to evacuate. Such, then, is the condition of most of the cases of fracture when received. In such cases I have removed all dead or doubtful bone, and stuffed the aperture right down on to the brain with an antiseptic dressing, such as iodoform gauze or boric lint. Where the pus has burrowed along the meninges a drainage-tube or hank of catgut has been inserted. In every such case perfectly free drainage is of the utmost value. In many instances large pieces of bone have been found driven into the brain substance, and removed without any perceptible after-evil result. My experience has been that the sooner a patient with a fractured skull is operated upon the better. It is a mistake to wait for symptoms of compression; and when symptoms of compression are already present, no time should be lost in operating, whether there be fracture or no. Of course I am referring to adult cases. On looking back on my cases I think it possible that had I operated at once on seeing case 6 he might have recovered, although there was no fracture in this case. In case 43, however, admitted to the hospital during my absence, my *locum tenens* thought it better to wait for symptoms of compression, etc. On my return I found the patient suffering from a passive inflammatory condition which, immediately after the operation, which was at once performed, became active and general, and the patient died a week after the operation. Where there was no septic condition, as in cases where there was no external wound, or in cases of epilepsy, I had the head shaved and washed the day before, and an antiseptic caput bandage applied all night. The hands and instruments used were always rendered thoroughly aseptic, and where there was no necessity for drainage, the scalp wound was closed and a dry boric or iodoform dressing applied. I have never had one of these cases become septic. In my later cases, before replacing the scalp I have planted over the dura mater a few fine pieces of the disc I have removed. I shall not go over each case, but will give in more detail a few of the more important.

The first case I did not see after the operation, as I operated at a place forty miles distant from my residence. Flies were allowed to get into the wound, and the natives put the juice out of their pipes into the wound to kill the maggots. I have no doubt they were successful, but they also killed the patient.

Case No. 10 was a very severe case of traumatic epilepsy. He was an European, who had been struck on the head by a native with one of their large heavy sticks, known in the Colony as a knob-kerry. He got increasingly severe headaches, which gradually terminated in epilepsy. The fits gradually increased in severity and frequency, until when he came under my care, nine months after the injury, he had, as a rule, four or five fits during the day, and frequently as many during the night. He had always to have some one with him, and was weak and emaciated. I trephined over a cicatrix, the seat of the injury, which was situated over the temporo-sphenoidal area corresponding to the centre of the fissure of Rolando. During a fit there were contractions of the facial muscles and forearm of the opposite side. The trephine cut through the meninges at one side before I had got through the bone on the other, cutting a small vessel in its course. By tilting the trephine I succeeded in getting through the entire circumference of the disc without injuring the brain. There was an extraordinary flow of sanguineous fluid. As there was a considerable opening through the meninges admitting abundant drainage, and as the patient was in a very critical condition, I immediately stuffed the wound and covered it up without suturing the scalp. To add to the alarm in this case, the patient had an epileptic seizure shortly after the administration of the chloroform was begun. There was a trace of a fissure in the external plate, and there was a considerable thickening of the internal plate, which was more pronounced on one side of the disc removed. The patient made a good recovery, and had only one fit within three months after the operation, when he left for England.

Case 16.—This was a case of compound comminuted depressed fracture, on which I operated at a mission station in the country. The patient was doing well, but the heathen parents insisted on taking him home, where he was attended by a native medicine man. Three weeks after the operation he was brought to the hospital. Above the ear, on the opposite side to that operated upon, I found a large fluctuating swelling, which I opened, evacuating a large quantity of fœtid pus. I found a roll of some vegetable substance, about the size of the end of the thumb, stuffed between the skull and brain where I had operated. To my horror I found the whole of both parietal bones quite dead and loose, and these I removed. I inserted a drainage-tube through the scalp above both ears. In this condition this man used to sit up and smoke with his brain literally floating in pus, and his head compressible like a concertina. He also conversed intelligently. He died five weeks after admittance to the hospital, from the pressure of pus on the medulla and spinal cord. This case serves to illustrate the value of free drainage.

Case 34.—C., an European who, the day before I saw him, had been out riding and had fallen from his horse on the side of his head. He was able to mount again and get home. When he got home he said he felt ill, and went to bed. He soon "went to sleep," but his friends did not think seriously of his condition, as he had been drinking. The following morning, however, when they found that he could not be roused, and that he was "breathing very funnily," they became alarmed and called me. I found the patient in a comatose condition, with stertorous breathing, and a weak, almost imperceptible pulse. There was a "gravel rash" on one side of the head, and the pupils enlarged, one a little more so than the other, and non-sensitive. I at once determined to trephine. It was nearly two hours from the time I saw him until I could operate. He was then in so serious a condition that I thought it hardly advisable to interfere. I trephined, however, at the lower part of the abrasion. The disc was speedily removed without any hitch, and with no other movement of the patient than an occasional twitching of the hand of the opposite side. Immediately the disc was removed there was a flow of dark sanguineous fluid, and bulging through the trephine hole there was a dark blood-clot. At the same time the patient began to kick a little and mutter, and I had to administer a little chloroform to finish the operation. I scooped as much of the clot away as I dared, put in a small drainage-tube, and put a stitch in the scalp. I thought it advisable and safer not to try to find a bleeding point, but to leave the clot over it undisturbed to become absorbed. The patient was restless the remainder of the day and during the night. The day following he was semi-conscious, and asked once for a drink. There was paralysis of the arm and leg of the opposite side, which rapidly disappeared, and the patient made an uninterrupted recovery.

Case 37.—MacP., an European, aged about 50, was struck on the head with a carpenter's hammer. The outer plate was seriously comminuted. I counted seventeen fragments of this portion of the skull, which I removed. The inner plate was fractured into four almost equal parts, which, when placed together, corresponded exactly to the size of the head of the hammer used. There is no special surgical feature about this case, except that there was considerable laceration of the brain, one of the fragments of the inner plate having been driven deeply into its substance. The patient had completely recovered from the brain injury when he died, three months after the operation, from the spreading of an abdominal aneurism.

Case 38.—This patient had received no traumatism, but gave a history which pointed to meningitis, from which he had suffered about a year before. He became blind shortly after the illness, and came to me because of the violent headaches from which he was then suffering. Ophthalmoscopically both optic nerves appeared to be atrophied, but one a little less so than the other. I watched this man for about a week before operating, and he used to sit most of the day with his head in his hands, groaning. I trephined just anterior to the line of the fissure of Sylvius, in a line with the frontal eminence. On removing the disc the membranes bulged into the opening. I made a small incision through the membranes, and immediately there was a jet of clear serous fluid, which continued to rise for about an inch above the membrane until I enlarged the opening, when it continued to flow in a steady stream. Before I operated I thought I should tap the ventricles, but when I found so much sub-arachnoid fluid I thought this unnecessary. I inserted a hank of catgut for drainage purposes and closed up the wound. The patient made a good recovery, the headaches disappearing entirely, and, as the patient expressed his feelings, "life became worth living." There was, however, no more vision when the patient left the hospital, about two months after the operation, than when he came in.

Case 39.—This was a case of traumatic epilepsy. The following letter from the magistrate gives the history :—" 'Nxomi' has been brought in by 'Pagati.' The former was struck on the head about three months ago, and he is still suffering from the effects. He cannot stand for long, but gets giddy and falls. Please examine him." I trephined over the seat of injury, and found evidence of a depressed fracture. The man made an uninterrupted recovery, and had no return of the fits.

Case 41.—This was an extensive fracture produced by a blow with the butt end of a rifle over the left frontal eminence, which at the autopsy was discovered to extend to the base. I made two trephine holes, and found great destruction of brain substance, with hæmorrhage into the same. The man was unconscious at the time of the operation, and never regained consciousness.

Case 42.—This case was somewhat similar to case 39, but, although he had had no more fits after the operation, he still complained of severe headaches up to a month after the operation, when I last saw him. I fear I did not drain this case sufficiently. There was a bulging over the seat of the trephine hole, indicating pressure from within. This I recommended to be re-opened and a drainage-tube inserted.

Case 43 I referred to at the beginning of this paper.

CRANIAL INJURIES.

No.	Name.	Nature of Injury.	Result.	Remarks.
1.	George.	Comp. com dep. fracture of skull.	Died.	Died two weeks after operation from neglect. Did not see patient after operation.
2.	Rallangabuso.	Do. do.	Cured.	Operated after driving patient 35 miles in my own carriage.
3.	Gamelako.	Do. do.	Do.	
4.	Hollosh.	Do. do.	Do.	
5.	Nosibutulu.	Extensive fracture of skull.	Died.	Child. Fracture from hoe. Died from cerebral hernia.
6.	Nquisliso.	Intra - cranial hæmorrhage.	Do.	Brought into hospital in comatose condition in the evening, and died next morning. P.-M., rupture of middle meningeal artery. Did not operate.
7.	Xalabele.	Fract. skull.	Cured.	
8.	Tom.	Do. do. —base.	Do.	Did not operate.
9.	Uzololu.	Fract. skull.	Do.	
10.	H. (European).	Traumatic epilepsy.	Do.	
11.	Gobo.	Fract. skull.	Do.	
12.	Uvilapi.	Do. do.	Do.	
13.	Xwatshuka.	Do. do.	Do.	
14.	Sarah.	Do. do.	Do.	
15.	Dolori.	Do. do.	Do.	
16.	Ndewu.	Do. do.	Died.	Operated in country. Died eight weeks after in hospital.
17.	Sijidi.	Do. do.	Cured.	
18.	Dida.	Do. do.	Do.	
19.	Wabola.	Do. do.	Do.	
20.	Fanapi.	Do. do.	Do.	
21.	Stoffel.	Do. do.	Do.	
22.	Tongelo.	Do. do.	Do.	
23.	Butani.	Do. do.	Do.	
24.	Mambalangu.	Do. do.	Do.	
25	Mankau.	Do. do.	Do.	
26.	Geti.	Do. do.	Do.	
27.	Mtisani.	Do. do.	Do.	
28.	Tiliswe.	Do. do.	Do.	
29.	Tyuliso.	Do. do.	Do.	
30.	Ishamasi.	Do. do.	Do.	
31.	Kaliba.	Do. do. —base.	Died.	Did not operate.
32.	Mfutshani.	Fract. skull.	Cured.	
33.	Tom.	Do. do.	Do.	

No.	Name.	Nature of Injury.	Result.	Remarks.
34.	C. (European).	Intra-cranial hæmorrhage.	Cured.	Trephined over seat of meningeal artery. Tied no vessel.
35.	Kambi.	Fract. skull.	Do.	
36.	Qwili.	Do. do.	Do.	
37.	Mac. (European).	Do. do.	Do.	Died three months after from spreading abdominal aneurism.
38.	Gati.	Amaurosis.	Improved.	Trephined.
39.	Nxomi.	Epilepsy, traumatic.	Cured.	See magistrate's letter.
40.	Mary.	Fract. skull.	Do.	Child injured by hoe.
41.	Majuba.	Fract. skull, extending to base.	Died	Trephined in two places. Extensive destruction of brain substance.
42.	Charley.	Traumatic epilepsy.	Improved.	Still suffering from severe headaches a month after operation, but had had no fits.
43.	Mali.	Fractured skull.	Died.	Patient admitted during my absence. Operated on return. General inflammation immediately followed, and death took place a week afterwards.

Part Fourth.

PERISCOPE.

MONTHLY REPORT ON THE PROGRESS OF THERAPEUTICS.

By William Craig, M.D., F.R.S.E., Lecturer on Materia Medica, Surgeons' Hall, etc., etc.

Lactophenin.—Landowsky (*Sém. Méd.*, February 7th) has tried the effect in several cases of lactophenin, a substance very closely allied chemically to phenacetin. This drug has antineuralgic properties analogous to those of antipyrin, and has, besides, a genuine hypnotic effect. The amount given daily was from 60 centigrammes to 3 grammes, divided into several doses. The only disagreeable effects caused by the drug seemed to be diaphoresis and slight giddiness in a few of the patients.—*British Medical Journal*, Feb. 17th, 1894.

Chloralose.—J. Ohmyelewski (*Medicinskoje Obosrenje*, No. 24, 1893) has tried chloralose in seventeen cases of mental disease, including simple and periodical mania, senile dementia, paranoia, melancholia agitata, etc. The drug was given in doses of from 3 to 6 centigrammes. Sleep was induced, as a rule, in about forty minutes after administration, and lasted from four to ten hours. In three cases transient tremor of the upper limbs was observed before the patient fell asleep. In two cases considerable perspiration occurred. No ill effects as regards the gastro-intestinal canal were noticed. In two cases considerable excitement followed the administration of the drug. On the whole, the author looks upon chloralose as a valuable remedy in cases of mental disease, and one especially likely to be useful where chloral and sulphonal are contra-indicated.—*British Medical Journal,* March 10th, 1894.

PIPERAZIN IN DIABETES.—Hildebrandt (*Berl. Klin. Woch.*, Feb. 5th, 1894) suggests that piperazin be employed in cases of diabetes. After abandoning syzygium jambolanum on account of its instability, and after he had failed to lessen artificial diabetes by a sero-therapeutic method, he endeavoured to find a drug which would exert an inhibitory effect on the fermentative changes which produce sugar within the organism, without lessening the alkalinity of the body fluids. He found piperazin to be possessed of these properties. It is strongly alkaline in reaction, and is eliminated in the urine without being decomposed. When artificial fermentations were carried on by adding a little dog's serum to a solution of starch, the presence of 1 part of piperazin in 1000 was found sufficient to diminish the production of sugar to a very marked extent. By a series of experiments he proved that piperazin does not destroy the amylolitic ferment, but merely diminishes its activity. In this respect the author finds that it surpasses all the drugs, such as salicylic acid, lactic acid, arsenic, syzygium jambolanum, extractum myrtilli, which have been employed in human diabetes. In the glycosuria induced by the administration of phloridzin to dogs, and which depends upon an increased production of sugar, he obtained exceedingly good results by the administration of piperazin. In one case, after the ingestion of about 30 to 45 grains of piperazin, the quantity of sugar in the urine was diminished about 90 per cent. on the second day. In another case it sank from 20 to 1·2 gr.; in another from 21 to 1·75 gr.; in another from 9·16 to 0·1 gr. After considering the probable mode of action of the drug in lessening glycosuria, Hildebrandt suggests its use in human diabetes, the dose being given half an hour before meals, after the gastric juice has been neutralized by a dose of bicarbonate of soda.—*British Medical Journal*, March 31st, 1894.

OXYGEN IN THERAPEUTICS.—J. N. Pitt writes on this subject in the *Medical Press and Circular*. He sums up his article with the following conclusions:—1. The inhalation of oxygen is of marvellous value in some cases of severe pneumonia, especially when there is much lividity and cardiac failure, and at the crisis. It fails in other cases, and the writer is inclined to suggest that where the condition is one mainly of cardiac failure and collapse, more benefit is obtained than in cases where the serious condition is especially due to a widespread œdema or bronchitis; but on this difference between the two classes of cases he would be glad to learn the experience of others. Some cases of severe bronchitis and asthma have, however, been benefited by oxygen. In one case of acute chronic bronchitis in an elderly lady, he saw some, though not very marked, relief of the dyspnœa. 2. In cases of empyema, pneumothorax, and pleuritic effusion, great relief can be afforded to the dyspnœa and cardiac failure, until operative measures are undertaken. 3. Cases of feeble patients with phthisis may be relieved, but more often there is no marked change. 4. Cases of weakly convalescents, and feeble cardiac cases, will often derive great benefit, and inhalations may be given periodically for weeks; but oxygen will not restore to health; it must simply be used as an adjuvant. 5. Cases of chlorosis, pernicious anæmia, and leucocythæmia receive great temporary benefit, but the oxygen must be supplemented by other drugs. 6. Conditions of asphyxia and lividity from respiratory engorgement due to cerebral failure, and also coma from various causes, may be relieved. 7. Its value in uræmia, though insisted upon by French writers, is still problematical. 8. It may also be of value in diminishing the risks of anæsthesia.—*Therapeutic Gazette,* March 15th, 1894.

THE TREATMENT OF WHOOPING-COUGH BY BROMOFORM.—According to the *Revue Internationale de Bibliographie Médicale,* Pelicer has employed bromoform with very good results in the treatment of this obstinate affection. It is a colourless liquid produced by the action of bromine on alcohol in the presence of a base. When administered to animals by inhalation or hypodermic injection, it produces narcosis without greatly disturbing the respiration or circulation. The dose is one drop for each year of the patient, given four times a day, but this dose should be increased progressively until it is taken many times a day. He has given as much as 48 drops a day during six days to a child of two years, but after this dosage he observed a general erythema, but no diarrhœa. There was increased frequency of the pulse and respiration. Bromoform diminishes the number of the attacks and their duration. Under its influence the vomiting ceases, and the appetite returns. It is to be employed during a period of two or three weeks. In a number of cases he used it even longer than this.—*Therapeutic Gazette,* March 15th, 1894.

OCCASIONAL PERISCOPE OF DERMATOLOGY.

By W. Allan Jamieson, M.D., F.R.C.P. Ed., Physician for Diseases of the Skin, Edinburgh Royal Infirmary; Lecturer on Diseases of the Skin, Edinburgh School of Medicine; late Consulting Physician to the Edinburgh City Hospital for Infectious Disease.

Acute Poisoning by Iodides—Œdema of Pharynx the First Symptom.—Mr Hutchinson relates the following interesting case:—" I ordered for a lady, who much needed it, a mixture containing, together with a drachm of the solution of mercury, four grains of the iodide of potassium and two of the iodide of sodium. These ingredients, together with a drachm of tincture of bark and two drops of battley, made up the dose which she was to take three times a day. She took but two doses, when she was seized by a sense of constriction and swelling in the throat, followed by general soreness of mouth and lips, and in the course of a few hours by burning of the whole skin, and an eruption of large erythematous wheals over the limbs and body. She passed a sleepless night in extreme discomfort, and the next morning was so ill that her husband insisted that I should come to see her. She had been liable to nettle-rash before. The eruption took the form of patches of erythema as large as the outspread hand, which occurred on the neck, face, chest, and thighs. They differed from nettle-rash in not being pale in the centre, and also in being persistent and larger, and more raised than is usual in that disease. It was quite obvious that the whole was due to the iodides, and within a few days all the symptoms had disappeared. I examined the urine, but there was no proof of renal incompetency. The symptom of swelling in the throat as the earliest indication of iodide poisoning has been noticed in other cases. I remember a man who was brought into the London Hospital in whom tracheotomy was only just in time to save his life."—*Archives of Surgery*, Jan. 1894.

On the Nature of Urticaria.—After describing the gradual evolution of the wheal, Dr Stephen Mackenzie notes that if the affected skin be stretched, the raised streak becomes of ivory whiteness. The whole process appears to be a reflex mechanism. If such is the case, there must be afferent branches of a nerve or nerves, a centre, and efferent nervous branches. Where is this centre? It is probable that it is the dense plexus of fine nerve fibres in the superficial layer of the corium. Probably local irritation plays a far larger *rôle* in the production of urticaria than is generally supposed. In some persons, however, the occurrence of urticaria is so evidently the result of something taken into the body, that we must find another explanation for such cases *ab ingestis.* The eruption may be occasioned by the irritation of the gastric mucous membrane, and the skin affection be a reflex process through the central nervous system. But his supposition is that something reaches the cutaneous nerve plexus, and thus the immediate cause of urticaria, whether by direct and mechanical stimulation or indirect and chemical stimulation, is irritation of the cutaneous nerve plexus. This supposition is favoured by the experience that factitious urticaria is often most easily provoked in cases where the original cause of the disease is of indirect origin, from error or idiosyncrasy of diet. A fact that appears to support the view that urticaria is produced by irritation of nervous plexuses of the skin itself, is the circumstance that it is nearly always more or less widely and indiscriminately distributed over the cutaneous surface, and not in the territory of any definite nervous supply. We practically never see anything like the distribution of herpes zoster. As exceptions, a case recorded by Rona is cited, in which a young woman, aged 18, suffered from rheumatism complicated with endocarditis, which was followed by urticaria and chorea on the left side of the body, and another of his own, where a lad of 15, on the morning after having had salt fish for tea, developed an eruption of red or pink papules, almost disappearing on pressure, extending over the left arm from the scapula to the wrist, and definitely confined to certain nerve tracts. Of internal remedies he has found the greatest benefit from antipyrin. 20 or 30 grains may be given at bedtime, and in chronic cases repeated each night.—*British Journal of Dermatology*, March 1894.

CHLORINATED LIME IN PRURITUS ANI.—Berger of Krementchug finds this give brilliant results. He inserts into the anus, about 1 inch deep, a piece of cotton wool soaked in liquor calcis chloratæ, B.P. The plug should be left *in situ* until the appearance of a slight smarting sensation, after which the wool should be removed and the anal region washed out with the same solution. The parts should be left undried. Pruritus vanishes immediately. On its reappearance the procedure must be repeated. Tumified tissues rapidly assume normal appearance, while any concomitant eczematous rash of the perineum or scrotum is cured by a few applications.—Quoted in *Brit. Journ. of Derm.* from Zemsky, *Vratch*, 1893, No. 13.

THE COMMUNICABILITY OF LEPROSY.—Reisner has made some interesting observations on this point in the poorhouses in Riga. Though leprosy has existed for long there, it had been noticed of recent years that the number of fresh cases showed an increase, and that the endemic leprosy exhibited a progressive character. In the poorhouses quite a series of cases occurred, of course most in aged persons; of these some had lived from fifteen to twenty years in the house, but in all more or less intimate association with leprous subjects could be proved. Most of the cases assumed the trophoneurotic type. The circumstances described serve to indicate the danger of prolonged consorting with infected persons. As bearing on the treatment of leprosy a case is related in full, in which gurjun balsam was applied externally and administered internally for nearly a year, was shown to the Medical Society of Livonia as cured, was discharged, was shortly after re-admitted with œdema of the face and extremities and a recurrence of the disease.—*Monatshefte für praktische Dermatologie*, 15th Feb. 1894.

Symmetrical Palmar and Plantar Keratodermia.—In an interesting and well-illustrated memoir Dr Alessandro Giletti has described an instance of a rare variety. It affected an otherwise healthy man, aged 25. On the soles and palms were scattered in an irregular fashion numerous punctiform or miliary elevations, of a pale yellow colour, and larger earthy yellow patches. These had a horny consistence, and imparted a sensation like a file to the hand. In addition to these elevated new formations, the entire skin of the parts showed a degree of thickening of the epidermis, and was pale yellow in hue. The natural folds of the palm were deeper than usual, were more rosy, and in winter tended to fissure. On the dorsum of the hands and on the legs were reddish or brownish yellow macules, consequent on an attack of purpura rheumatica. He had a severe visitation of typhoid fever in 1889, after which appeared an erythematous eruption on the palms, as a sequence of which the thickening of the epidermis and the new formations manifested themselves. Arsenic was prescribed, and was apparently taken pretty continuously for four years. Sections showed the epidermis in its horny layer enormously developed, as well as the rete Malpighii, but not specially round the sweat pores. Giletti thinks his case is not an example of arsenical keratosis, but a tropho-neurosis started by the typhoid fever. He cites a similar instance recorded by Hans v. Hebra, but it is almost certain that this was a case of arsenical keratosis, as the patient admitted having taken arsenic for her complexion for six years, and it was after this had been taken for a time that the affection of the palms came on. —Torino, Fodratti & Lecco, 1894.

OCCASIONAL MEDICAL PERISCOPE.

By A. Lockhart Gillespie, M.D., F.R.C.P.E.

Leucocytosis.—Several interesting additions to our knowledge of the significance of this condition have been made lately. Of these a paper entitled "A Study of the Leucocytosis of Lobar Pneumonia," by James Ewing, M.D. (*New York Medical Journal*, December 16, 1893), presents several features of interest. The author examined the blood of 101 patients suffering from acute pneumonia, only on one occasion in each case, and at the height of the attack. He found that the extent of the lesion influenced very considerably the number of leucocytes in the blood. In the sixty-three cases in which one lobe was involved the average number of leucocytes was 20,000; in the twenty-four cases, involving two lobes, the average was 22,700; in the twelve cases, involving three lobes, the average rose to 25,000; while 27,000 were found in a case in which four lobes were attacked. The above figures, while true of a series of cases, are unsafe when applied to individuals. Further analysis of his figures showed that if the infection was mild the number of leucocytes was low, although the same thing occurred in asthenic and rapidly fatal cases. The most valuable part of the paper is that in which the author points out that in many instances a differential diagnosis between pneumonia and typhoid and typhus can be made in difficult cases, by the fact that the leucocytes in both these fevers are never increased. Again, he states that in acute apical lesions the absence of leucocytosis is decisive evidence in favour of tuberculosis, except when dealing with a lobar pneumonia which is very mild, or whose course is asthenic. The number of leucocytes affords no help in the diagnosis between lobar pneumonia and empyema, or actinomycosis of the lungs. A moderately low degree of leucocytosis in severe cases of lobar pneumonia is an extremely unfavourable sign.

Laehr, "Über das Auftreten von Leucocytose bei der kruposen Pneumonie" (*Berliner Klin. Wochenschrift*, 1893, No. 36 u. 37), examined the blood several times in each case. He indicates a parallelism between the temperature, the number of leucocytes, and the size of the portion of lung tissue inflamed. These three factors probably depend on the severity of the infection. In one of his cases, eight hours after the preliminary rigor the number of leucocytes was increased, while in another a relapse was heralded by a similar increase. For diagnostic purposes it is well to remember that acute diseases characterized by an exudation of any sort into the tissues present an increase of leucocytes in the blood, while the other acute disorders, as typhoid, measles, influenza, etc., do not. Tschistowitsch has already shown that rabbits infected with pneumococci develop a leucocytosis unless the disease proves fatal. Van Jaksch has on these grounds recommended that cases of pneumonia with a small number of leucocytes should be treated with drugs such as pilocarpin, which stimulate the formation of these cells.

G. Schulz, "Experimentelle Untersuchungen über das Vorkommen und die diagnostische Bedeutung der Leukocytose" (*Deutsches Archiv für Klin. Medicin*, Bd. li. Heft 2 u. 3), looks on the whole subject of leucocytosis as a *terra incognita*. He regards the normal post-prandial leucocytosis as the result, not of new cell formation in the lymphatic system of the intestines, but of the increased pressure of the blood stream washing more leucocytes out of the larger veins of the intestinal walls.

Laehr, in the paper mentioned above, notes that in pneumonia it is the polynuclear forms which increase so much in number, the eosinophile corpuscles being relatively diminished. Zappert (*Zeit. für Klin. Med.*, Bd. xxiii. Heft 3 u. 4), in an interesting essay on the eosinophile leucocytes, gives some indications with regard to diagnosis, founded on the number of these cells present in the blood. He finds that the normal number of eosinophile cells in adults varies between 55 and 784 in a cubic millimètre. If the numbers found in any one case change much, even if between the normal limits, the case is pathological. The presence of large, non-amœboid eosinophile marrow-cells in the blood is regarded by Rieder and Müller as evidence of the existence of leukæmia. Zappert has observed these cells in the blood of patients suffering from profound anæmia and from certain skin diseases.

The eosinophile cells are markedly increased in nephritis, functional nervous affections, and skin diseases; decreased in organic nervous disease, cachexia, and fevers such as pneumonia and typhoid.

Zappert explains this by supposing that in the febrile state the development in the blood of the eosinophile from the mononuclear corpuscles is retarded or arrested, while in skin diseases, etc., the change is hastened.

GONORRHŒAL ENDOCARDITIS.—In the *Centralblatt für Innere Medicin* for January 13, 1894, several papers are quoted on the subject of gonorrhœal endocarditis. Leyden (*Deutsche Med. Wochenschrift*, 1893, No. 38), in a fatal case of ulcerative endocarditis with chronic gonorrhœa, found gonococci in the exudation and ulceration of the valves. No other cocci could be cultivated either from the heart vegetation or from the blood. Wilms (*Münchener Med. Wochenschrift*, 1893, No. 40) cultivated diplococci from the ulcers in the aortic valves of a patient who died with the symptoms of acute infective endocarditis while suffering from gonorrhœa. These micro-organisms were all stained quickly with Gram's reagent. Wilms, however, does not regard these organisms as the same as the gonococci. He argues from the fact that as gonococci are not found in the tissues themselves and are unable to form true abscesses, and that as heart affections never come on until the height of the gonorrhœa is past, they are therefore not the cause. He concludes that—1, The gonococcus is unable to produce malignant endocarditis any more than to cause other ulcerative processes; 2, the complications of gonorrhœa, except those false abscesses which are merely collections of leucocytes round gonococci, and with no destruction of tissue, are due to secondary infection from the urethral canal. Wilms's premises rest on rather insecure foundations, for gonococci have been found in the tissues; they are still capable of growth in latent cases of gonorrhœa which are infectious, while the distinctive staining for their detection is so clear that observers can hardly have been mistaken as to their presence in the cardiac vegetations. Michaelis (*Deutsche Med. Wochenschrift*, 1893, No. 45), in answer to Wilms, states that he examined the heart bacteriologically in Leyden's case, and that he obtained an absolutely pure culture of gonococci from it.

PERISCOPE OF SYPHILIS AND GENITO-URINARY DISEASES.

By Francis Cadell, F.R.C.S.

Gonorrhœa at the age of 103.—This case is reported in the *Medical Record*, April 14, 1894, by Dr A. E. Isaacs. No special time is given for the decadence of the sexual functions in the male, but the general impression is that it is on the wane and disappears long before the allotted "threescore years and ten." The old man, the subject of this history, presented himself with a copious gonorrhœa, which he stated was only of a few days' duration; genitals well developed and showing no signs of senility. In his own words, "He didn't know more than that chair about a woman" till 50 years of age. He still feels a desire for sexual intercourse. The following question suggests itself in connexion with this case:—"Could there be any causative relation between the late appearance of sexual activity and its persistence to this advanced age?"

Treatment of Chronic Urethritis.—In the *Medical Record*, April 14, 1894, Dr J. M'Grath recommends the following:—The treatment consists in the use of a large quantity of a weak solution of nitrate of silver, used in the beginning every day. At first an injection of from 12 to 14 ounces of ¼ grain to the ounce solution is used. This is introduced into the bladder through a soft-rubber catheter of small size—a No. 8 French with large bore, lubricated with glycerine, being convenient and easy of introduction. Through this the solution is allowed to flow from an ordinary glass irrigating jar with rubber tube attached; the catheter is then withdrawn, and immediately thereafter the patient is allowed to empty the bladder, thus washing out the bladder and whole length of the urethra. This solution is injected every day until the urine shows marked improvement, which is usually at the end of one week or ten days, and after that at intervals of two or three days. The strength of the solution need not be increased to more than a half grain to the ounce, when the quantity of the solution may be somewhat reduced, say to 8 or 10 ounces. The act of urination immediately before introduction of the catheter cleanses the urethra sufficiently, and with usual precautions for clean instruments there seems to be no danger of causing irritation or infection.

Castration of Sexual Perverts.—Dr F. E. Daniel concludes a paper on this topic as follows:—While we cannot hope ever to institute a sanitary utopia in our day and generation, it would seem within the legitimate scope and sphere of preventive medicine, aided by the enactment and enforcement of suitable laws, to eliminate much that is defective in human genesis, and to improve our race mentally, morally, and physically; to bring to bear in the breeding of peoples the principles recognised and utilized by every intelligent stock-raiser in the improvement of his cattle; and in my humble judgment the substitution of castration, as advocated above, for the useless and cruel execution of criminals, is the first step in the reformation. I predict that in twenty years the beneficial results of castration for crimes committed in obedience to a perverted (diseased) sexual impulse will be established and appreciated. Rape, sodomy, bestiality, pæderastia, and habitual masturbation should be made crimes or misdemeanours, punishable by forfeiture of all rights, including that of procreation; in short, by castration, or castration plus other penalties, according to the gravity of the offence. It is to be hoped that the medical profession will no longer neglect the investigation of a psychological state fraught with so much significance to criminal jurisprudence. The meaning of every phase of perverted sexuality should be understood, not only by physicians, but by jurists. A more free and unreserved intercourse between the two learned professions should be fostered, when, with a better understanding of the subject in its relation to crime, they can co-operate to secure a modification of existing unsatisfactory laws, and the enactment of others consonant with a more advanced state of medico-legal knowledge. This we owe to ourselves, if we would not merit reproach; to posterity, if we would secure to future generations the full fruits of sanitation in the practice of the great science of preventive medicine.—*Daniel's Medical Journal.*

VENEREAL DISEASES IN INDIA.—Dr W. Duncan (London) writes:—Permit me to note some few objections to the Contagious Diseases Act, as administered in India, which ought not to be lost sight of. I have seen virgins not arrived at puberty, and concubines under protection of private individuals unconnected with the army, presented at lock hospitals by the police for public examination because they were unable to satisfy the demands made on them for blackmail. Within a radius of five miles around a cantonment it was considered unsafe for any ordinary labouring woman to be met alone by a policeman. The cantonment police officials are poorly paid, and earn an income by levying blackmail on prostitutes (one-fourth of a prostitute's earnings are claimed by the police) and others, whom they threaten to bring under cantonment regulations. It was generally believed that any complaint lodged against the police would be rewarded by the cantonment magistrate with confinement in gaol for eight days. I have only once heard of a complaint against lock hospital officials being entertained, and that was before a High Court, after long delays and heavy expenditure. Poor people were unable to protect themselves, and only too willing to stretch a hand for help to people with "perverted moral sentiments" or whatever came in the way. The natives, except the few obtaining profit, detested the measures introduced by the military authorities for the surveillance of their women.—*Brit. Med. Journ.*, April 14, 1894.

VENEREAL DISEASES IN THE ARMY.—On the motion of Mr Jeffreys in the House of Commons a return has been recently furnished showing the statistics of venereal disease in the Army in the United Kingdom from 1870 to 1892, and in foreign stations, separately, from 1879 to 1892. In a review of these returns in the *British Medical Journal*, March 24, 1894, these conclusions are arrived at:—"The Contagious Diseases Acts, honestly and unrestrainedly applied to our garrison towns and camps, decreased the number of men constantly sick from venereal disease by from 20 to 25 per cent. At present we constantly have the strength of two strong infantry battalions always non-effective through venereal disease; and at least one-half, if not two-thirds, of this waste might be prevented by the re-enactment and careful administration of a Contagious Disease Act. The money loss to the taxpayer is very great."

On Spermatorrhœa and Incipient Hypertrophy of the Prostate, and a Proposed Method for its Treatment.—In the *Boston Medical and Surgical Journal*, March 8, 1894, Dr Hogner suggests the application of massage to the prostate by the rectum. He found the treatment most beneficial in lessening the number of weekly nocturnal emissions, and, in cases of enlargement of the prostate, by reducing the size of the gland. "Massage was given once or twice daily per rectum (while the patient was recumbent with elevated pelvis, at the same time placing his fists under the buttocks), partly while the sound (solid No. 10) lay within, partly after it was withdrawn, and continued as long as possible,—that is, only a few minutes, as long as the physician can endure it. As a conductor during the massage the sound is of great value, because it makes the prostate more approachable and steady; moreover, it causes the massage to be so much more effective by reason of the double pressure which is given by the finger per rectum and the instrument per urethram, a pressure which becomes more local than that between the finger and ramus pubis, against which the organ otherwise is resting when the sound is removed."

Part Fifth.

MEDICAL NEWS.

Royal College of Physicians, Edinburgh.—The following gentlemen passed their Final Examination for the degree in Medicine during the last Quarter, and were admitted L.R.C.P. Ed.:—Duncan M'Alpine, Winnipeg, Manitoba, Canada; David Wm. Kennedy, Monaghan, Ireland; William Gill, Radcliffe.

Royal College of Surgeons, Edinburgh.—The following gentlemen, having passed the requisite Examination, have been elected Fellows of the Royal College of Surgeons, Edinburgh:—John Small, L.R.C.P. & S.E., Geelong, Victoria, Australia; Norman Hay Forbes, M.R.C.S. Eng., L.R.C.S. Lond., Tunbridge Wells, Kent; Charles Howard Usher, M.B. Bac. Surg. Camb., Edinburgh; Masha Allah Khan, M.R.C.S. Eng., L.R.C.P. Lond., London, N.; and Herbert Charles Faulke, L.R.C.P. & S.E., etc., West Mersea, Colchester.

The following gentlemen, having passed the requisite Examination, have been admitted Licentiates of the College:—James Joseph Griffiths, Whittindale, Coventry; James Heffernan, Tipperary; and Duncan M'Alpine, Dundee.

The following gentlemen passed the Final Examination, and were admitted L.D.S. Edinburgh:—Robert Lindsay, Edinburgh; John Kyle Mackintosh, Inverness; David Robertson Campbell, Glasgow; Alexander Young, Halifax; Murray Forbes Thomson, Dublin; Frederick Robert Guyler, Liverpool; Joseph Morton, Carlisle; and Malcolm James MacGregor, Edinburgh.

Henry Manwaring Holt, M.R.C.S. Eng. and L.S.A. Lond., Norton, Malton, passed the requisite Examinations and received the diploma in Public Health, granted by the Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow.

Edinburgh University Passes.—The following is the list of the Candidates who have passed the First and Second Professional Examinations in April, along with the names of two Candidates who have been awarded the Thomson Bursary and the Vans Dunlop Scholarship:—

Old Ordinance—*First Professional Examination.*—William Anderson, F. J. H. Bateman (B.A.), J. B. Boyd, C. W. Breeks, A. J. W. Buchanan, Joseph Cæsar, C. J. Chaddick, Selwyn Champion, M. N. Chaudhuri, E. V. Collins, Matthew Corry, T. M. Coutinho, G. L. K. Finlay, J. V. Fox, W. C. H. Forster, W. H. Goldie, James Grieve, S. J. Grinsell, W. J. H. Hislop, J. T. Hurst, A. H. James, F. F. Kerr, John Mackenzie, Marcus Mackenzie, M. W. Manuk, B. N. Mullan, E. J. Nichols, D. J. C. Oliver, F. W. Rigby, N. H. Ross, D. C. Sethna, John Stevenson, G. R. Twomey, Mohammed Varis, R. H. Walter, J. O. Williams, and W. E. Williams.

New Ordinances.—D. V. M. Adams, A. J. T. Allan, V. G. Alexander, J. R. Anderson, E. P. Baumann, William Bell, H. L. S. D. Belasco, Stanley Branch, William Bnrns (M.A.), A. E. Burroughs, David Clow, R. V. Cowey, Robert Crawford, Robert Cnmming, L. W. Davies, R. J. Dick, W. H. Dickinson, J. E. Dods, C. L. Dunn, W. S. Eaton, Duncan Forbes, A. Fordyce, J. S. Fraser, A. T. Gailleton, Alexander Goodall, J. H. Gordon, William Gorrie, J. T. P. Heatlley, Rowland Hill, Patrick Kinmont, F. O. Lasbrey, E. W. Lewis, J. S. Low, W. C. M'Kechnie, R. W. Mackenna, W. W. Maxwell, James Miller, J. D. S. Miln, L. H. B. Mills, W. J. Nntter, F. M. Parry, H. R. Phillips, Robert Pugh, J. A. Raeburn, J. M. Reid, Thomas Rogerson, R. F. M. Scott (with distinction), W. M. Smith, Edgar Somerville, G. H. Stewart, William Tarr, Henry Taylor, W. B. Thain, A. H. Thompson, G. E Twigge-Molecey, W. E. Wallis, W. C. Wilson, Alic Wood, A. G. Worrall, and G. J. Young.

Second Professional Examination.—James Alison, H. H. Balfour, James Bannerman, N. D. Bardswell, W. J. Bell, G. J. Blackmore, J. B. Blaikie, A. S. Brass, H. S. Brockway, Daniel Brongh, Scott Carmichael, H. C. Colman, A. J. Copplestone, W. J. C. Coulthard, John Crawford, R. W. Cunningham, James Davidson, J. M. Dawson, M. V. Dee, D. F. Dewar, Artbur Dickson, A. F. Evans, David Evans, William Evans, F. W. B. Fitchett, A. W. Fletcher, J. A. Forrest, W. C. H. Forster, G. B. French (with distinction), Frederick Gardiner, J. W. Geddes, W. E. Gibbons, F. M. Gibson (B.Sc.), John Gilchrist, J. D. Gilrnth (M.A.), D. J. Graham, Lewis Grant (M.A.), W. T. Grant, James Gray (M.A.), Rhodes Haygarth, C. M. Hector, George Henderson, G. P. Henderson, J. H. Henderson (B.A.), J. J. Hewison (M.A.), J. T. Hewetson, A. L. Husband, F. R. Jones, George King, James Kirk, J. H. Lamb, H. A. Leebody, G. R. Leighton, R. M. Leith (with distinction), W. J. Lewis, William Lillie, G. R. Livingston, J. R. Lord, A. M. Love, W. L. Lyall, Alexander MacCarthy-Morrogh, John M'Donald, W. M. Macdonald, W. C. W. M'Dowell, T. H. Macfie, John Maciver, D. M. Mackay, Charles MacLaurin, John Macmillan, J. L. Marjoribanks, W. R. Mander, J. S. Martin, James Massey, G. H. Masson, Joseph Mason, R. A. Milne, J. R. Muir, J. G. P. Murray (with distinction), A. G. Naylor, S. D. Ogilvy, T. T. Ormerod, Richard Owen, A. D. Peill, W. J. Pentold, W. H. Price, G. L. Procter, R. B. Purves, J. K. Raymond, E. S. Reid, E. G. Richards, Hugh Richardson, Thomas Roberts, R. S. Rodger, R. L. Roe, L. C. Saldanha, A. T. Sampson, E. W. K. Scott, J. G. C. Scott, T. M. Scott, T. B. M. Sherwen, C. M. Simpson, E. M. Skeete (B.A.), J. E. W. Somerville, James Stenhonse, Alexander Steven, J. B. Stewart, John Stoddart, J. C. Stuart (with distinction), A. C. Sturrock, M.A. (with distinction), D. C. Sutton, H. F. L. Taylor, F. S. C. Thompson, W. H. Thomson, David Waterston, James Watt (B.A.), H. G. Wangh, G. A. Welsh, L. A. Williams, G. H. Wilson, and A. D. Yule (with distinction).

The following Candidates have passed in Anatomy and Physiology:—John Ballantyne, Edwin Bramwell, John Bruce, W. J. Buchanan, W. H. Carse, J. H. Dixson, H. O. Dougall, A. W. Easmon, A. M. Fleming, Thomas Gibson, W. G. C. Geekie, William Hewison, W. H. Hill, J. F. Lindsay, A. P. Low, Stuart M'Donald, A. D. Macpherson (M.A.), M. W. Mannk, F. H. Merry, William Mowat, J. S. Norwell (B.Sc.), A. L. Owen, A. J. Park, W. T. Ritchie, W. H. Robb, David Rodger, J. T. Shirlaw, F. O. de Souza, G. E. Stewart, Robert Thornton, Andrew Wallace, A. E. White, and G. F. Whyte.

The Thomson Bursary, in the subjects of the Preliminary Examination, has been awarded to Mr James Masson.

The Vans Dunlop Scholarship, in the subjects of Anatomy, Physiology, Materia Medica, and Pathology, has been awarded to Mr A. Corsar Sturrock, M.A.

Royal Colleges of Physicians and Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow.—The Quarterly Examinations for the Triple Qualification in Edinburgh took place in April, with the following results:—

First Examination.—(*Four Years' Course*)—Of 15 Candidates, the following 11 passed:—John Critchley Pemberton, Dublin; Charles Wakeham Holmested, Essex; Edward Vivian Halliday, Jamaica; Tirnmangalath Canjaradeu Krishna Kurup, Malabar; John Henry O'Sullivan, Queenstown; Charles Ernest Player, Swansea; Gulab Singh, India; Richard Edward Russell, Cork; Walter Belfield Grannum, Barbados; Selby Woodhouse Morton, New South Wales; and John Neill Keith, Ceylon. One Candidate entered for a division and failed. (*Five Years' Course*)—Of 17 Candidates, the following 14 passed:—William Laidlaw Cribbs, Midlothian; Flora Rosina Cartwright Wood, Portobello; Gilbert Jamieson Meikle, Inveraray; Harriet Amelia Scott Bird, Castle Eden; Rees William Rees, Wales; William Robertson, Edinburgh; David Scott Taylor, Alyth; Maud Varley Everett, Suffolk; Robert James Pearson, Cumberland; Montague Rust, India; Edith Mary Paton, London; Gertrude Mary Hutton, Benares; Rosina Jane Gillam, Brechin; and Richard James Isaac, Pontardulois. Of 13 Candidates who entered for the respective divisions, 9 passed.

Second Examination.—(*Four Years' Course*)—Of 52 Candidates, the following 33 passed:—Pelham Wykesmith, Oxford; Hugh John Drummond Mackay, Kirkwall; Samuel Johnson, Manchester; George Percival Searle, Devonshire; Martin Francis Lyden, Galway; William Craig, County Donegal; David Archibald Chalmers, Glasgow; Agnes Irene Sinclair Coghill, Thurso; William Charles Edmund Donoghue, Dublin; Percy Brooke Unwin, Wigan; Edward Vivian Halliday, Jamaica; Harry Bennet Palmer, Bedford; Walter Squibbs, Somersetshire; Charles Ernest Player, Swansea; James Jeffares, Wexford; William Charles Millea, County Galway; Rose Govindu Rajulu, Madras; Isabella Aitken, Berwickshire; Alfred Jebb Nevett, Shropshire; Pierce Power, County Cork; William Bratton, County Tyrone; James Clement Purcell Reardon, India; Alexander Smith, Glenlivet; Annie Caroline Smith, Belgaum; Edward Wright, Dublin; Walter John Stephen

Clucas, Isle of Man; Mary Finch Nannetti, London; Isabella Hardie Curr, Auchtermuchty; Winifred Jane Pierce, Gwalior; William John Gething, Adelaide; Herbert Huston Warren, Armagh; John Neill Keith, Ceylon; and William John Nixon Davis, India. Of 15 Candidates who entered for the respective divisions, 6 passed. (*Five Years' Course*).—The following 8 Candidates entered and passed:—Ethel Louie Starmer, Matlock (with distinction); Mildred Jane Wallace, United States (with distinction); John Rutherford Morris, Aberdeen; John Cranke, Ulverston; John Dodds, Selkirk; Richard Francis Flood, Reigate; Walter Hulbert Cox, Ceylon (with distinction); and John Gawler Murray, Hong-Kong.

Final Examination.—Of 77 Candidates, the following 48 passed and were admitted L.R.C.P.E., L.R.C.S.E., L.F.P. & S.G.:—Harold Downes, Devonshire; George Prentice, Carnwath; Henry William Vaughan, Devon; John Jamieson Wallace, Belfast; Charles Copland Piper, Chelmsford; Patrick Gabriel Joseph Kennedy, County Tipperary; Florence Hope Dissent, Calcutta; Mary Barnard, Bombay; Reginald Edward Ingram Johnson, Sheffield; Wilson Ranson, Norwich; John Garner, Downpatrick; James Thornhill Woodhouse, Stockport; Thomas Ernest Price, Worcestershire; William Fleming Stevenson, Strabane; Ernest Kinloch Johnstone, Devon; Catherine Mabel Blackwood, Edinburgh; William Henry Tracy Vallange, London; Henry Paul Butterworth, Cheshire; Frank Carlyon Rundle, Devonshire; David Stephenson, Yorkshire; William John Gething, Adelaide; Elizabeth Marianne Erskine, Govan; William Atkinson Hardiker, Birmingham; Charles William Laver, Melbourne; John Gorman, Co. Down; Charles Wilfrid Lawson, Edinburgh; Robert Alexander M'William Robinson, Co. Antrim; John Meade, Kilmalloch; Simon Finkelstein, Lipsk; Vivian Ernest Chang, Shanghai; Alfred Theodore Anderson, Manchester; John Inch Bald Johnson, Yorkshire; Cecil Beaumont Roscrow, India; Grace Haxton Giffen, Morebattle; William Thomas Wood, Co. Cork; John Hoggan Ewart, India; Cecil Gordon Foggo, Morayshire; William Henry Barnby, Great Yarmouth; Horace Joseph Palmer, London; John Joseph Fitz-Gerald, Cork; Charles Ernest Conran, Madras; Edmond Frewen O'Ryan, Tipperary; Frederick William Clark, Market Drayton; Joseph Henry Ensor Trout, Birmingham; William Owen Evans, South Wales; Arthur Bailie Francis, Donegal; Edward Haddon Ohlmus, Colombo, Ceylon; and John Barrow Osborn Richards, London. Of 20 Candidates who entered for the respective divisions, 9 passed.

Royal Colleges of Physicians and Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow.—At the April sittings of the Conjoint Examining Board of Scotland, held in Glasgow, the following Candidates passed the respective Examinations:—

First Examination (Five Years' Course).—David Campbell, Inverliver; Walter Hibbert, Bradford; James T. O'Connor, Carrigrohane; William Mason, Belper; John Glen Parker, Neilston. *In Division II. (Chemistry only).*—Samuel Vernon Robinson, James Boosh Durrans. (*Four Years' Course.*)—Passed with distinction—Christopher William Davidson, London. Passed—William Huslam Brooks, Bolton; Arthur George Johnson, Sutton-on-Trent; George C. Beamish, Cork; Harry Thornber Davies, Southport; Joseph Sanderson, Yorkshire; George James Goldie, Portobello; Charles Joseph Sutton, Cork; Thomas Homer, Worcestershire; Alexander C. Campbell, Glasgow; Walter Beck, Belfast; Michael M'Manus, Co. Roscommon; Samuel M'Clure Gibson, Co. Down. *In Division I. (Chemistry only).*—Hassam A. Lakhani.

Second Examination (Five Years' Course).—Mary Bowman Wilson, Ochiltree; Alexander Ross, Glasgow; Duncan M'Gregor, Aberfoyle. (*Four Years' Course*).—Arthur Charles Adderly, Cork; George M. Speers, County Antrim; Hugh M'Kay, Glasgow; Joseph Scott Gill, County Tyrone; John A. M'Ilroy, New Zealand; T. C. Krishna Kurup, Malabar; James T. Hancock, Birkenhead; Edmund Barker, Horingham, Yorkshire; Richard J. Owen, Anglesey; Ernest Blair, South Shields; Alexander Kennedy, Ayr; William Watson, Glasgow; James M. Ramsay, Airdrie; William Alexander Pope, Dalkey; Michael M'Manus, Co. Roscommon; David S. Henderson, Coatbridge; John C. Glen, South Bank, Yorkshire; George H. Pearce, Whitby; Edward B. H. Hughes, Wellington-on-Tyne; Joseph H. Waddington, Bradford; B. B. Nora, India. *In Divisions I. and II. (Anatomy and Physiology).*—Emily Frances Fitz Simons, James Law Brownridge. *In Division I. (Anatomy).*—William G. Pritchard, Thomas W. Mason. *In Division II. (Physiology).*—Albert Ernest Blades.

Final Examination.—William James D. Preston, Runcorn; Henry Bateson, Edinburgh; John M'Lean, Glasgow; Rev. James Fenwick, Glasgow; Edmund Denison, Leeds; James Rutherford, Moffat; Samuel T. Brooks, Farnworth; Minnie Ethel Bowlby, London; Edward Vivian Halliday, Edinburgh; Henry John Heginbotham, Stockport; William David Jones, Glasgow; Stella Irene Flora Greaves, London; John Alfred Dyson, Hull; Robie Wendall West, Edinburgh; Thomas French, Westwood, Co. Cork. *In Divisions II. and III. (Surgery, Midwifery, and Medical Jurisprudence).*—John Thorney. *In Division III. only (Midwifery, etc.).*—S. S. Sidall, Jeanie G. R. Duggan, James S. Montgomery. *In Divisions I. and III. (Medicine, Midwifery, etc.).*—Daniel W. Jones.

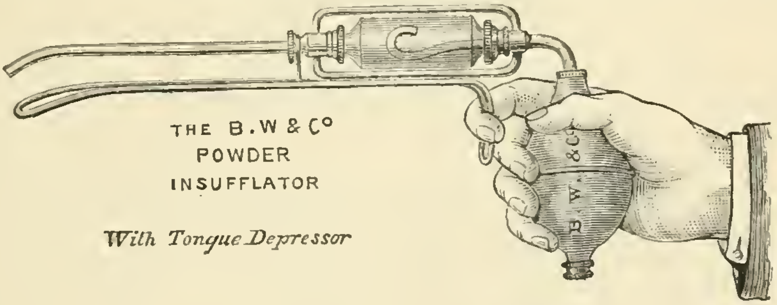
Antiseptic Surgery was the theme of Sir Joseph Lister's interesting address to the Medical Students of Glasgow University on the evening of the 17th ultimo. The Union Hall was crowded, and the Lecturer was received with great enthusiasm.

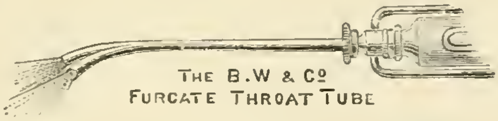
PROFESSOR GAIRDNER ON THE HEALING ART IN ITALY.

The following remarks by the head of the medical branch of our profession in Scotland will be read with interest by our readers:—

In beginning the summer course of lectures in the University on May 1st, Professor Gairdner said that he desired to make a few remarks suggested by his visit to the International Medical Congress at Rome, although he did not propose to speak, except in the most general way, of the Congress itself. Whatever else was apparent, even to the superficial observer, one thing was quite certain, namely, that in medical matters Italy is striving hard to resume, if possible, the place which for so many ages she occupied in the vanguard of European thought and intellectual progress. In every leading centre men are to be found working upon the most advanced lines of pathological and medical inquiry, familiar many of them with several languages, and possessed of all the most modern ideas, the intercourse especially between Germany and Italy being immensely fruitful of late years. In several instances German or Teutonic Professors have found their home and their field of instruction in the old Italian Universities, just as Vesalius of Brussels did in the 16th century,—a fact all the more remarkable when it is remembered that the Latin language has almost ceased to be the common tongue of Professors, while the German occupation of North Italy was long one of the greatest political grievances of the Italians, a grievance only ended by the bloody battle-fields of Solferino and Magenta. This great intellectual advance in respect of Medicine Professor Gairdner declared to be even more striking to him than the large expenditure which is now being lavished on hospitals and means of teaching (as in the magnificent "Policlinico" of Rome itself) by a country greatly impoverished, as compared with her neighbours, as regards her available financial resources. And yet, said Dr Gairdner, Professor Macewen will tell you, if you ask him, that in all matters of hospital and clinical arrangements, present and prospective, Rome, Genoa, and Turin are ahead of us in Glasgow. Leaving this point, Professor Gairdner said that he could not refrain from insisting on the contrast between his first and his last visit to Italy, in respect of the condition then and now of the science and art of Medicine. In 1845-46, a young man fresh from the school of Edinburgh found Italian Medicine and Surgery whole decades behind the rest of Europe. In the very country of Morgagni, the originator of scientific pathology, there was at that time no pathology worthy of the name ; nothing but endless speculations and absolutely inane controversies as to diseases which were, or were supposed to be, hypersthenic, and diseases which were hyposthenic,—a wave of controversy which really originated in the shallow if specious imposture of Brunonianism, which had its birthplace, indeed, in Edinburgh in the latter part of last century, but which very soon fizzled out in the land of its birth. Dr Gairdner said that in his earlier years in Edinburgh it became part of his duty to read the Italian medical journals which were exchanged with the Edinburgh Journal, but that up to and even after the time when Virchow had commenced his splendid career of pathological discovery, so full of the reality of progress because it was so firmly based upon nature and fact, the medical journals of Milan, Turin, and Bologna (which were then considered the most advanced in Italy) were full of these inanities, and hardly ever afforded anything worthy of reproduction in the English language. It is difficult to understand how the country which in 1761 had given birth to the great work of Morgagni could have sunk into such a state of medical decadence as that of Italy in the "fifties." The magnificently enthusiastic reception accorded to Rudolph Virchow in 1894 by the whole Italian nation, and the graceful and appreciative *éloge* pronounced by the great German pathologist on John Baptist Morgagni as the first and greatest of his predecessors in well-ordered pathological research, may be taken as marking in a very striking and almost dramatic way the rejuvenescence of Italy in medical science. That Virchow is the legitimate successor of Morgagni in the present day no one can doubt. It may even be doubted whether in any country of the world there is any intervening name which can be placed in the same rank as these two. Yet the marvellous fact was that, in and about 1850, Italy seemed to have lost touch altogether with the lines of progress initiated by their own greatest pathologist, and the art of healing had sunk into a corresponding position of obscurantism. These things are a lesson for us also, if we should ever be tempted to suppose that by casting away or neglecting the foundations of the medical art we can ever hope to improve it in its more practical as contra-distinguished from its scientific aspects. It was the death of Cavour that sounded the tocsin of this decadence, and aroused the whole medical profession of Italy to the voice of all Europe, proclaiming, rightly or wrongly, that that great statesman had been slain outright by the blood-lettings performed upon him repeatedly according to an exploded system of practice worthy of a barbarous age. At all events, the new Medicine may be said to have had its birth in Italy with the times of her political regeneration. What influence the latter had upon the former Dr Gairdner did not stop to inquire; but it should not be forgotten that even a distracted and divided Italy had produced in the last century such splendid specimens of medical genius as Redi and Spallanzani, to say nothing of such physicians as Volta and Galvani, and that in the preceding centuries she had not only adopted Vesalius, the greatest of anatomists since Galen, but had shown forth a perfect galaxy of medical names of the highest eminence, extending down to Malpighi in the 17th century and Morgagni in the 18th, names which place her easily in the forefront of all the nations of Europe up to these dates. We can only hope for her that she will go on prospering and to prosper, and thus recover in the 20th century all her former lustre.

THE NEW B., W., & Co. INSUFFLATOR.—Messrs Burroughs, Wellcome, & Co. state that their new insufflator is "neat, light, highly finished, and altogether the most satisfactory form yet offered for the application of dry powders by insufflation." After careful trial of the instrument we quite endorse this statement. By a simple and ingenious arrangement the powder cylinders are made interchangeable, so that different powders can be used in the same apparatus without more than a few seconds' delay. The instrument ought to last a lifetime without risk of breakage.





OBITUARY.

THE LATE DR ROBERT LUNAN OF BLAIRGOWRIE.

THIS splendid specimen of an old Scotch country doctor died in his house at Blairgowrie on Wednesday, April 25th, at the age of 81. Born in the Manse of Kinettles in 1813, he studied medicine in Edinburgh, getting his anatomy from Knox, and took his L.R.C.S. in 1835. After a voyage in a whaler, and a year's assistantship with his uncle, Dr Smith, in Forfar, he settled in Blairgowrie in 1836. There he rapidly gained an extensive practice, not only in the town, but in the wild and extensive country district round it. By his constant cheerfulness and kindness, by the zeal and industry rendered possible by his magnificent constitution and untiring unselfishness, he became the beloved physician of the district. His blunt, frank manner, his thorough knowledge of human nature, great natural shrewdness, and extensive experience, won him implicit confidence. Generous to a fault, he never refused to work, even when he knew he would get nothing but thanks as his reward. He knew well also how good it is *desipere in loco.* He was an enthusiastic fiddler, and his collection of violins is large and valuable. An excellent shot, especially with the rifle, and a powerful curler, the doctor's stalwart form was well known at many a gathering in Perthshire and Forfarshire. He married a daughter of Mr Robertson, Mains of Clunie, but Mrs Lunan predeceased him many years ago. Of their twelve children seven survive, and his third son, Dr Charles S. Lunan, having been his partner for many years, is now his successor, and keeps up the family name in the district with much success. During a somewhat tedious and painful illness, in which he was devotedly attended by his son and an unmarried daughter, the fine old man kept up his interest in life and cheerfulness to the last. Few men have left the world leaving so many friends and so few enemies.

CORRESPONDENCE.

(*To the Editor of the Edinburgh Medical Journal.*)

April 21*st*, 1894.

SIR,—According to the new rules which have recently been framed for graduation in the University of Edinburgh, it is impossible for those who have commenced their studies before the present year, or who are now graduates of the University, to go up for the M.D. by passing the prescribed examination in clinical medicine, etc. It is likewise impossible for them to get the Ch.M.

As many graduates would like to get these degrees after examination, surely they should be allowed to go up under the new rules. It is true that there are other universities in which no further examinations are required for the higher degrees, still it is a drawback to present Edinburgh graduates to be excluded from degrees by examination if they wish to have them. I need hardly say that they are quite prepared, like myself, to be examined just as strictly as other candidates for those degrees.—I am, dear Sir, yours faithfully,

AN EDINBURGH GRADUATE.

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